Better Homes and Gardens®

WOOD

THE MAGAZINE FOR HOME WOODWORKERS

$3.50

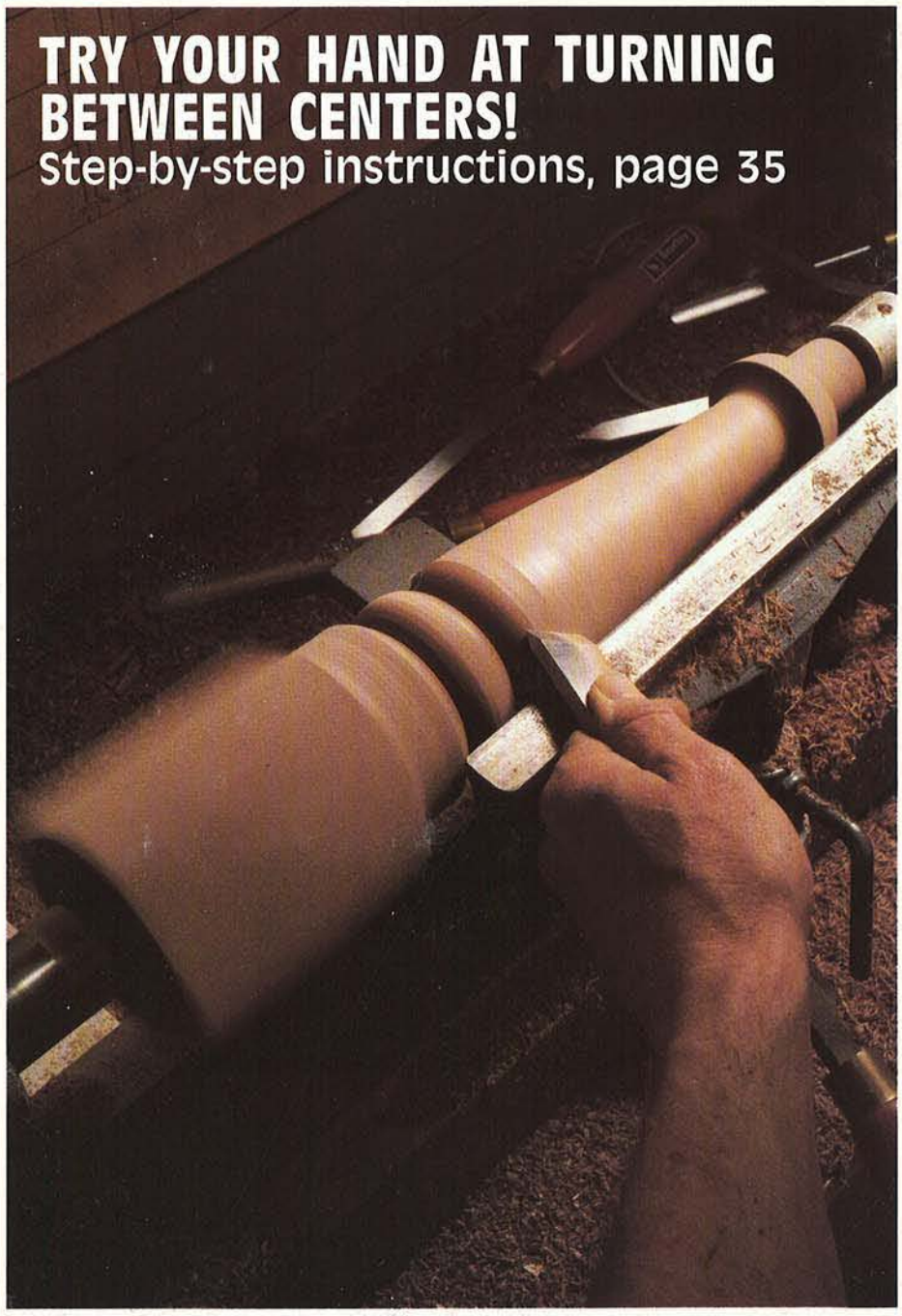
August 1985•ISSUE NO. 6
Display Until August 20

PROJECTS APLENTY
versatile workbench
turned walnut vase
and pedestal table
3-in-1 nest of boxes
hexagon patio table
breakfast barstools
two terrific kid's
toy boats

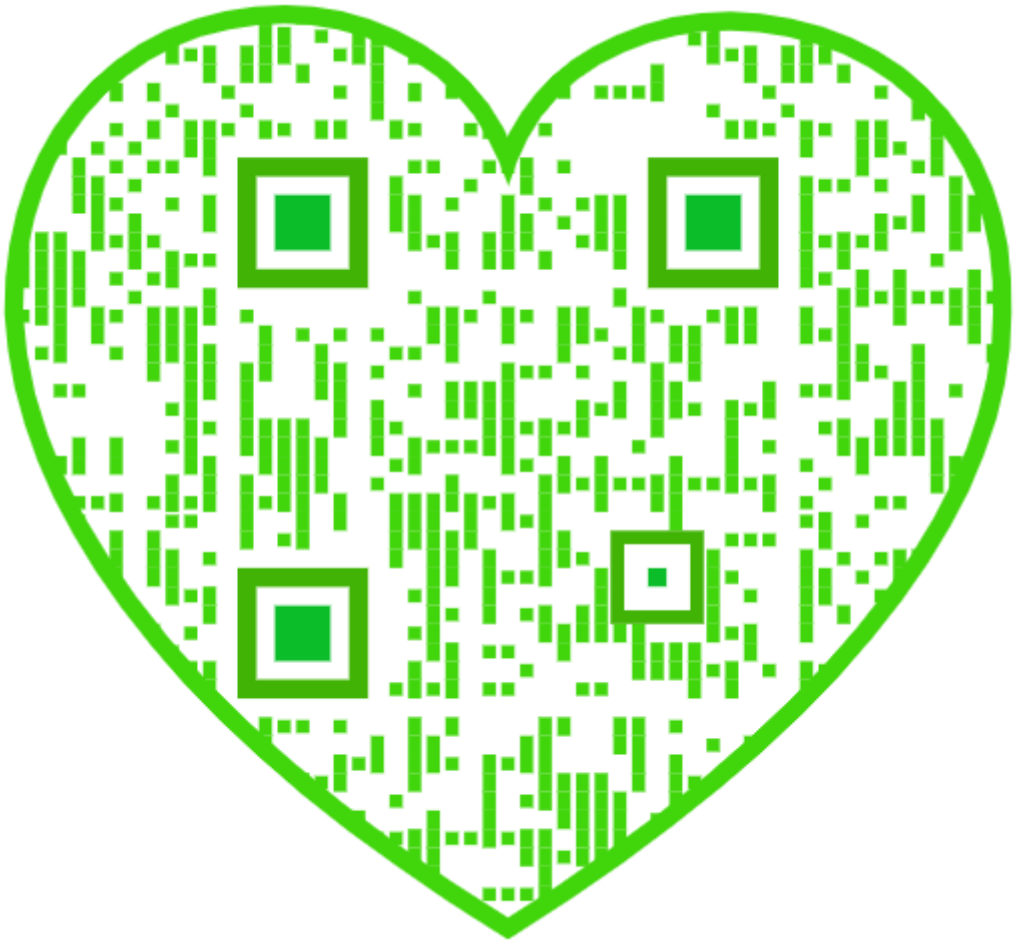
BUYING A LATHE
latest features
comparison chart
shopping tips

TABLE SAW HELPERS
6 great accessories
you can build

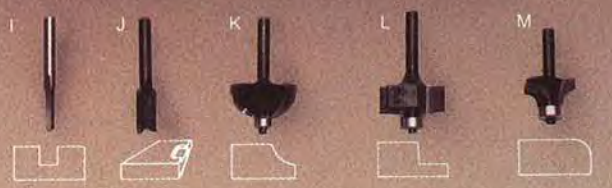
WHEN TO USE HARDWOOD PLYWOOD
what's available
how it's graded
where to buy it



0 14005 14072 08



SUPERSALE



	ITEM	DESCRIPTION	LIST	SALE
A	LU73M010	10" x 60 Teeth Gen. Purpose ATB	$ 79.65	**$ 44.90**
B	LU72M010	10"x 40 Teeth Gen. Purpose ATB	68.58	**39.90**
C	LU85M010	10" x 80 Teeth Super Saw ATB	110.88	**73.90**
D	LU84M011	10" x 50 Teeth Combination 4 & R	74.51	**44.90**
E	LU85M009	9" x 72 Teeth Super Saw ATB	101.98	**64.90**
F	PS203	7¼" x 24 Teeth Gen. Purpose ATB	27.45	**18.90**
G	PS303	7¼" x 40 Teeth Gen. Purpose ATB	32.97	**24.90**
H	DS308	#3 Dado 8" Max. Width of Cut 13/16"	170.25	**119.50**
I	04-106	¼" Diam. ¾" Cut. Length Solid Carbide	11.05	**8.80**
J	16-100	½" Diam. Mortising Bit C.T.	12.73	**10.10**
K	30-106	½" Radius Cove Bit C.T.	33.64	**25.90**

	ITEM	DESCRIPTION	LIST	SALE
L	32-100	1¼" Diam. Rabbeting Bit C.T.	$ 27.62	**$ 22.10**
M	34-110	¼" Radius Rounding Bit C.T.	27.62	**22.10**
N	38-100	5/32" Radius Ogee Bit C.T.	32.90	**26.30**
O	42-106	½" Diam. ½" Cut. Length Flush Trimming Bit	15.62	**12.50**
P	64-100	Solid Carbide Flush Trim Bit	7.64	**6.10**
Q	66-100	Solid Carbide 7° Bevel Bit	8.30	**6.64**
R	3557R	35MM Diam. 10MM Shank Boring Bit	31.90	**25.50**
S	06218	2⅛" Diam. ½" Shank Boring Bit	89.00	**69.80**
T	C310	Set of 3 4" x 5/8" x ⅛" Jointer Knives	18.29	**13.40**
U	C350	Set of 3 6" x 5/8" x ⅛" Jointer Knives	27.45	**19.90**
V	C441	Set of 3 8" x 5/8" x ⅛" Jointer Knives	36.58	**28.90**

Sale Extended to December 31, 1985

Note: All Saws & Dado have 5/8" Bore
All Router Bits have ¼" Shank
ATB = Alternate Top Bevel

4 & R = 4 Teeth & 1 Raker Tooth
C.T. = Carbide Tipped

freud usa

218 Feld Ave., High Point, NC 27264
(919) 434-3171
1570 Corporate Dr., Suite G
Costa Mesa, Cal. 92626 (714) 751-8866

In California
Call Toll Free:
1-800-824-0141

If You Live
In This Area:
Call Toll Free:
1-800-824-8045

If You Live
In This Area:
Call Toll Free
(Outside NC)
1-800-334-4107

Call us for the name of your nearest Freud distributor.

In Canada Call 416-747-7040

Total Shop . . . the name for quality.

You've heard of the Shopsmith® woodworking machine — now take a look at Total Shop — the improved woodworking machine.

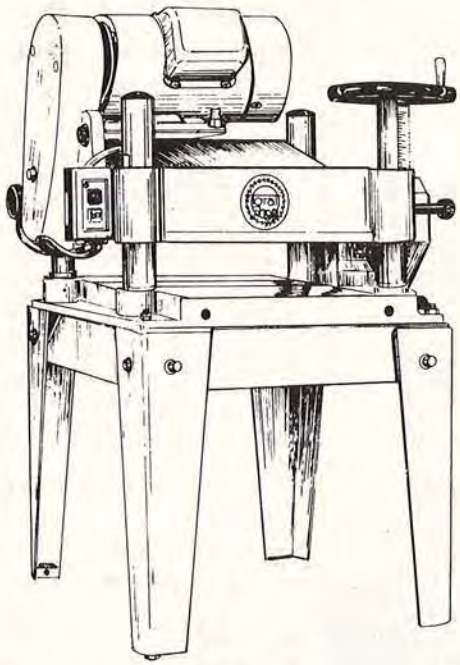
For Example:

1. **1½hp motor develops nearly 3hp while Shopsmith® motor is 1⅛hp developing 2hp.**
2. **Motor can be altered by owner to 220V. Shopsmith® does not have this option.**
3. **Though a larger and more powerful motor, Total Shop runs quieter than the Shopsmith® machine.**

Let us send you 11 more reasons Total Shop is a better buy.

Attention Shopsmith® Owners: Call today for our accessory brochure and save money.

CALL TODAY
toll free
1-800-845-9356
in S.C. call
288-4174



Introducing:

Total Shop TS 15-6 Planer

- 110 V or 220 V
- Stand & dust collector available
- 2 HP motor
- 15″ width, 6″ thickness

Total Shop®

P. O. Box 16297/Greenville, SC 29606

clip and mail coupon for: Free Informational Kit

Total Shop®

Dept. Q
P.O. Box 16297
Greenville, SC 29606

Your Name _____

Address _____

City _____ State _____ Zip _____

Phone _____

☐ Multipurpose tool ☐ TS 15-6 Planer

Training Schools available

©United Metal Services, Inc

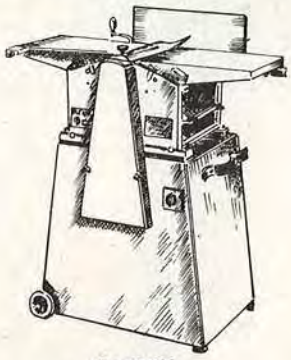
ELEKTRA BECKUM

ADVANCED TECHNOLOGY
WOODWORKING MACHINES

ELEKTRA BECKUM

VALUE - FOR - MONEY

TF100M
3 speed shaper,
3 HP, $985.00,
CAP 6″ × 4¼″ stroke



HC260K
40″ jointer/planer
4.2 HP, $1,375.00,
CAP 10⅛″ × 6⅜″

BAS450
18″, 4-speed
band saw 1.5 HP,
$1,360, 12″ cut height

HDM1000
40″, 4-speed lathe
¾ HP, $695.00
including stand

SPA 1000
Dust Extractor
765 CFM ¾ HP,
$450.00

2.4 HP,
One Motor Powers
3 Machines

COMBI SAW
12″ or 14″, 3
110 lb. $410.00,
40″ × 24″ table

Your partner in woodworking

See these machines demonstrated at the following shows:

Sept. 13-15	Detroit, MI
Sept. 27-29	White Plains, NY
Oct. 4-6	San Jose, CA
Oct. 25-27	Chicago, IL

Send $1.00 for full color catalog to:

ELEKTRA BECKUM U.S.A. CORP.
P.O. Box 24, Dept. WJA
401-3 Kennedy Blvd.
Somerdale, NJ 08083

Call us toll-free at 1-800-223-8600 or contact your nearest Elektra Beckum dealer.

ARKANSAS

Layman's Shopping Center
509 East Emma
Springdale, AR 72764
501/751-4861

CALIFORNIA

Rosewood Tool Supply
1836 Fourth St.
Berkeley, CA 94710
415/540-6247

Atlas American Tool
1365 N. Catalina St.
Burbank, CA 91505
818/841-4614

W.I.S.E., Inc.
10900 South Vermont Ave.
Los Angeles, CA 90044
213/757-3164

CONNECTICUT

Brian's Tool Sales
9 Moody Rd.
Bldg. B, Unit 7
Enfield, CT 06082
203/623-6282 or 763/2084

DISTRICT OF COLUMBIA

W. S. Jenks & Son Woodworking Tools & Supplies
738 7th St. NW
Washington, DC 20001
800/638-6405

ILLINOIS

R. A. Ness & Co. The Woodworkers Emporium
8888 N. Milwaukee Ave.
Niles, IL 60648
312/824-0565

INDIANA

Northwest Lumber Co.
5035 Lafayette Rd.
Indianapolis, IN 46254
317/293-1100

KENTUCKY

The Xylophile's Co.
138 E. Loudon Ave.
Lexington, KY 40505
800/354-9083

LOUISIANA

Southern Saw & Cutter Co., Inc.
2508 Hickory Ave.
Metairie, LA 70003
504/738-6063

MASSACHUSETTS

Beaver Woodworking Supplies, Inc.
1 Brockton Ave.
Brockton, MA 02402
617/583-4631

Harland B. Foster, Inc.
15 Bridge St.
Gt. Barrington, MA 01230
413/528-2100

MISSOURI

Pyramid Products Tool Division
1200 Erie St.
No. Kansas City, MO 64116
816/421-0890

Restoration Specialty Co. The Woodworker's General Store
1629 N. Second St.
St. Charles, MO 63301
314/947-0030

NEW HAMPSHIRE

Tool Warehouse
2 Park Ave.
Hudson, NH 03051
800/645-9166

NEW JERSEY

The Tool Chest
45 Emerson Plaza East
Emerson, NJ 07630
201/261-8665

NEW YORK

Brady Supply Corp.
649 Madison Ave.
PO Box 326
Elmira, NY 14902
607/733-6591

Tool Warehouse
9 Willow Park Center
Farmingdale, NY 11735
800/645-9166

OHIO

Michigan Saw & Cutter
5601 Alexis Rd.
Sylvania, OH 43560
419/885-4753

PENNSYLVANIA

Tools-R-Us
Great Southern Shopping Ctr.
Route 50
Bridgeville, PA 15017
412/257-1120

Austin Hardwoods-Phila., Inc.
932 E. Hunting Park Ave.
Philadelphia, PA 19124
215/533-2822

SOUTH CAROLINA

Hiller Hardware
1411 Assembly St.
Columbia, SC 29202
803/779-3131

TEXAS

SUPERTOOL!
8108 Hwy. 80 West
Ft. Worth, TX 76116
817/244-5611

M. Chandler and Co. (Fine Woodworking Tools)
6005 Milwee #709
Houston, TX 77057
713/784-0065

SUPERTOOL!
1101 W. Pipeline Rd.
Hurst, TX 76053
817/284-1103

VERMONT

Sisco Supply, Inc.
4050 Williston Rd.
So. Burlington, VT 05401
802/863-9036

VIRGINIA

Harper Hardware Co., Inc.
1712 E. Broad St.
(18th & Broad)
Richmond, VA 23223
804/643-9007

WISCONSIN

Woodcrafters
316 S. Broadway
Green Bay, WI 54303
414/432-8988

Better Homes and Gardens®
WOOD
THE MAGAZINE FOR HOME WOODWORKERS

August 1985 Issue No. 6

Editorial/Art Staff
Editor **LARRY CLAYTON**
Managing Editor **DAN KAERCHER**
Art Director **C.L. GATZKE**
Design Editor **JAMES R. DOWNING**
Features Editor **PETER J. STEPHANO**
How-To Editor **MARLEN KEMMET**
Project Builder **JAMES E. BOELLING**
Administrative Assistant **DARLENE REYNOLDS**

Technical Consultants: **GEORGE GRANSETH** Product Testing; **ALAN D. MILLS** Finishing; **VERNON U. WARD** Collectible Tools; **PAUL L. McCLURE** Wood Technology

Editorial Director **DORIS M. EBY**
Publishing Director **ADOLPH AUERBACHER**

Editorial Services
Executive Director **DUANE L. GREGG**
Director, Editorial Research **C. RAY DEATON**
Administrative Editor **ROSE ANDERSON**

Publisher **JERRY KAPLAN**
Promotion/Research Director **THOMAS J. TROLAND**
Production Director **DALE SCHENKELBERG**

Publishing Group Officers
President **JACK D. REHM**
Senior Vice Presidents
General Manager,
Magazines **JAMES A. AUTRY**
General Manager,
Books and Newspapers **FRED STINES**
Group Vice President
Editorial Director **DORIS M. EBY**

Corporate Officers
Chairman of the Board **E. T. MEREDITH III**
President **ROBERT A. BURNETT**
Group Presidents: Publishing **JACK D. REHM;** Broadcasting **W. C. McREYNOLDS;** Real Estate **ALLEN L. SABBAG**
Senior Vice President **JAMES CONLEY**
Vice Presidents: Corporate Relations **DONALD L. ARNOLD;** General Counsel and Assistant Secretary **THOMAS G. FISHER;** Product Development **NEIL KUEHNL;** Corporate Planning **HERB SCHULTE;** Finance **WILLIAM H. STRAW;** Administrative Services **GERALD D. THORNTON**
Secretary **BETTY CAMPBELL MADDEN**
Treasurer **MICHAEL A. SELL**
Controller **LARRY D. HARTSOOK**

Better Homes and Gardens® WOOD — the magazine for home woodworkers (ISSN-0743-894X) is published bimonthly in February, April, June, August, October, and December by Meredith Corporation, 1716 Locust Street, Des Moines, IA 50336. Application to mail at second-class postage rates is pending at Des Moines, Iowa. Trademark registered in Canada and Australia. Marca Registrada en Mexico. **SUBSCRIPTION PRICES:** One year $15 in the United States and its possessions. Canada and other countries add $6 per year. **POSTMASTER:** Send address changes to WOOD, 1716 Locust Street, Des Moines, IA 50336. August 1985, No. 6. **CUSTOMER SERVICE:** For service on your magazine subscriptions, including change of address, write to Customer Service Manager ROBERT AUSTIN, P.O. Box 10628, Des Moines, IA 50336. Please enclose a recent address label.
©COPYRIGHT MEREDITH CORPORATION 1985. ALL RIGHTS RESERVED. PRINTED IN U.S.A.

FREE SANDING BELTS
DIRECT FROM THE MANUFACTURER

GET SIX FREE BELTS FOR EACH DOZEN ORDERED. All belts are aluminum oxide first quality. Our electronic presses make smooth bump-free splices.

Check your size and how many dozen. We will ship assorted grits unless otherwise specified.

☐ 1" x 30" — $12.70/doz.
☐ 1" x 42" — 12.75/doz.
☐ 1" x 44" — 12.80/doz.
☐ 3" x 18" — 13.75/doz.
☐ 3" x 21" — 14.25/doz.
☐ 3" x 23¾" — 14.70/doz.
☐ 3" x 24" — 14.75/doz.
☐ 3" x 27" — 15.25/doz.
☐ 4" x 21¾" — 16.75/doz.
☐ 4" x 24" — 17.25/doz.
☐ 4" x 36" — 20.95/doz.
☐ 6" x 48" — 26.95/½ doz. (3 FREE)

Other size belts on request.

9" x 11" Paper Sheets

A/O Cabinet Paper

	50/pk.	100/pk.
40-D	☐ $17/pk.	☐ $31/pk.
50-D	☐ 16/pk.	☐ 28/pk.
60-D	☐ 15/pk.	☐ 26/pk.
80-D	☐ 14/pk.	☐ 24/pk.
100-C	☐ 13/pk.	☐ 22/pk.
120-C	☐ 13/pk.	☐ 22/pk.
150-C	☐ 13/pk.	☐ 22/pk.

NEW ITEM!
☐ BELT CLEANING STICK - $6.95

No Load Finishing Paper

	50/pk.	100/pk.
180-A	☐ $11/pk.	☐ $19/pk.
220-A	☐ 11/pk.	☐ 19/pk.
280-A	☐ 11/pk.	☐ 19/pk.
320-A	☐ 11/pk.	☐ 19/pk.
400-A	☐ 11/pk.	☐ 19/pk.

Wet or Dry S/C Paper

	50/pk.	100/pk.
220-A	☐ $15/pk.	☐ $25/pk.
320-A	☐ 15/pk.	☐ 25/pk.
400-A	☐ 15/pk.	☐ 25/pk.
600-A	☐ 15/pk.	☐ 25/pk.

Prompt delivery from stock.
MONEY-BACK GUARANTEE

Shipping Charges - Under $35 add $2.50; $35 or more add $4.00—PA residents add 6% sales tax.

☐ Check or Money Order.
☐ MasterCard ☐ VISA Exp. Date _____
Acct. # _____
Name _____
Address _____
City, State & Zip _____

CALL TOLL FREE
1-800-428-2222
PA Only - 1-800-222-2292

INDUSTRIAL ABRASIVES CO.
643 North Eighth Street
Reading, PA 19603

This Is The *HEGNER* Lathe*!

- ***HEGNER*** quality
- ***HEGNER*** design
- ***HEGNER*** reliability
- 4 speeds - 15¾" swing
- 39" or 49" capacity
- Smooth, quiet & powerful

*Shown with rear-mounted duplicator

Ask for our free brochure.

AMI, Ltd.
P.O. Box 312, Dept. 19
New Castle, Delaware, 19720
302-322-2226

AMI Ltd.
Advanced Machinery Imports

TREND-LINES BEATS ANY AD THIS ISSUE!

If another prepaid price is lower, we match the price and give you a gift certificate worth $5.00 when purchasing from our catalog. Few restrictions apply.

Minimum Order $15.00

Freight prepaid in all U.S.A. on orders of $35.00 or more.

Note:Under 35.00 add $2.00 per order. Extra charge to Alaska and Hawaii on stationary machines. Typographical errors are rare but do occur. Any error is subject to correction by Trend–Lines. This ad expires August 31, 1985. Watch for our next ad.

FREE CATALOG WITH ORDER OR BY WRITING TO POST OFFICE BOX.

SPECIAL SALE TO READERS OF THIS AD
You Must Mention This Ad When Ordering

800-343-3248 USA 800-322-6100 Mass.
617-884-8882 Non-Order Calls

TREND-LINES, INC.

375J Beacham St.
P.O. Box 6447J
Chelsea, Ma. 02150

VISA MasterCard
or personal check

Open Monday to Saturday 8:00 AM-5:00 PM

30 DAY MONEY BACK GUARANTEE
Examine any item in your home or shop. If it's not what you expected, return it in original condition for a full refund.

Free with any order:
- 1 Year (3–4 issues) catalog subscription
- Subscription to Woodworking Trends
- Membership in TLC with special offers
- For special prices, ask for code WDJA5

New! Freud tool sets

4 Pc.	Chisel Sets	19.95
6 Pc.	Chisel Sets	31.75
10 Pc	Chisel Sets	52.95
8 Pc.	Lathe Set	53.95
6 Pc.	Carving Set	59.50
12 Pc.	Carving Set	111.50

Free Wooden Case

MAKITA TOOLS

1100	3 3/4" Planer Kit	$199.50
1805B	6 1/8" Planer Kit	264.95
1900BW	3 1/4" Planer w/cs	94.95
2030N	12 1/2" Plnr/Jntr	1475.00
2040	15 5/8" Planer	1175.00
2400BW	10" Miter Saw w/bld	248.95
2401BW	10" Miter Saw w/blade w/electric brake	205.00
2708	Table Saw	228.95
3601B	Router	119.95
3608BK	Router w/cs	84.95
3612BR	3 HP Router	179.95
3700B	Laminate Trimmer	84.75
4200N	4 3/8" Circular Saw	94.95
4301BV	Vr. Sp. Orbital Jig Saw	128.95
5007NB	8 1/4" Circular Saw	98.75
5008NB	8 1/4" Circular Saw	109.95
5012B	12" Chain Saw	119.95
5081DW	3 3/8" Cord. Saw	108.95
5201NA	10" Circular Saw	219.00
5402A	16" Circular Saw	374.50
6000R	Uni–Drill	109.50
6010DL	Cordless Drill w/charger light & case	99.95
6010DWK	Cordless Drill w/charger & case	99.95
6010SDW	3/8" Rev. Cordless Drill	48.95
6012HDW	Cord. Drill Kit 2–Sp	108.95
6510LVR	3/8" Drill–Rev.	73.50
6710DW	Cord. Screwdriver	109.50
6800DBV	Drywall Screwdriver	88.95
9030	1 1/8"x21" Belt Sander	129.50
9035	Finishing Sander	48.00
9045B	Finishing Sander	99.95
9045N	Dustless Sander	107.95
9207SPB	7" Sander Polisher	139.95
9401	4"x24" Belt Sander	165.00
9501BKT	4" Sander Grinder Kit	89.95
9900B	3"x21" Belt Sander	123.95
9924DB	3"x24" Belt Sander	139.75
BO4510	Finishing Sander	46.95
BO4530	6" Round Finish Sander	57.95
DA3000	3/8" Angle Drill	104.75
DA3000DW	Cordless Angle Drill	104.75
DK1001	Drill (6010D), Charger & Vacuum Cleaner	124.50
DP3720	3/8" Reversible Drill	59.95
DP4700	Drill Reversible	95.95
GV5000	Disc Sander	54.95
HP1030	Hammer Drill	107.50
JG1600	Jig Saw single Sp.	97.50
JR3000V	Recipro Saw	124.95

PONY CLAMP FIXTURES

	Each	Pkg 6
No. 50 3/4" Pipe Clamp	7.30	6.55 ea
No. 52 1/2" Pipe Clamp	6.05	5.60 ea
No. 1215 (WEB) 15"	6.80	6.35 ea
No. 7456 Clamp Pads	2.95	2.50 ea

JORGENSON BAR CLAMPS

(Heavy Duty)		Each	Pkg. 6
No. 7224	24"	17.30	15.70 Ea
No. 7230	30"	18.10	16.45 Ea
No. 7236	36"	18.70	16.95 Ea
No. 7248	48"	20.75	18.70 Ea
No. 7260	60"	22.65	20.55 Ea
No. 7272	72"	24.55	22.25 Ea

JORGENSON CLAMPS (Med Duty)

No. 3712	12"	5.90	5.35 Ea
No. 3724	24"	7.30	6.60 Ea
No. 3730	30"	8.20	7.40 Ea
No. 3736	36"	8.85	7.95 Ea

JORGENSON HAND SCREWS

No. 3/0	3"	$8.45	7.60 Ea
No. 0	4 1/2"	9.90	8.90 Ea.
No. 1	6"	11.30	10.15 Ea.
No. 2	8 1/2"	13.45	12.15 Ea.

JORGENSON BAR CLAMPS (5" Reach)

No. 4512	12"	Open	17.45	15.70 Ea.
No. 4524	24"	Open	20.85	18.85 Ea.
No. 4530	30"	Open	21.90	19.65 Ea.
No. 4536	36"	Open	22.90	20.60 Ea.

JORGENSON & PONY CLAMPS

No. 3325	3 Way Edging	5.75 5.10 Ea
No. 1623	3" Hold Down	7.50 6.30 Ea
No. 3202HT	2" Spring	2.15 1.90 Ea

RYOBI TOOLS

B7075	3X21 Belt Sander	$125.00
B7200A	4x24 Belt Sander	189.95
BD1020R	3/8" Cordless Screw driver	109.50
D1015A	3/8" Screwdriver /Dril	99.95
E3800A	Drywall Screwdriver	99.95
JSE–60	Electronic Jigsaw	149.95
L–120U	3 5/8" Planer	105.95
L1323A	1/4" Planer	139.95
LS–35	Finishing Sander	59.95
L–580	6 1/8" Planer	249.95
R–150	1 HP Plunge Router	109.95
R–330	2 HP Router	159.95
R–500	3 HP Plunge Router	189.95
S500A	3x51/2 Finishing Sander	46.95
TR–30	Laminate Trimmer	99.95
TS–251UB	10" Miter Saw w/Freud LU85M10 Blade	229.95

MILWAUKEE TOOLS

0228–1	3/8" VSR Drill	$ 94.95
0234–1	1/2" VSR Drill	114.90
0375–1	3/8" Rev. Angle Drill	117.75
1107–1	1/2" VSR D Handle	144.95
5660	1 1/2 HP Router	184.50
5680	2 HP Router	219.75
5935	4"X24" Sander	214.90
6014	1/2 Sheet Sander	114.95
6255	Vr. Sp. Jigsaw	139.95
6287	H.D. Jigsaw	224.50
6305	6 1/4" Cordless Saw	169.50
6507	Sawzall w/case	124.95
6539–1	Cordless Screwdriver	63.95
6543–1	1/4" Screwdriver	149.95
6749–1	Magnum screw/ driver	137.50
6750–1	H.D. Drywall Screw driver	99.95
6753–1	Drywall Screwdriver	84.75

DELTA (ROCKWELL) POWER TOOLS

11–072	32" Radial Drill	$399.95
22–651	13" Planer	1445.00
28–243	14" Band Saw	526.00
28–283	3/4 HP Bandsaw	775.00
31–730C	Belt and Disc Sander	1350.00
	Sawbuck	519.00
33–150	10" Radial Arm Saw	475.00
33–990	Miter Saw	168.50
34–010	10" Contractors Saw	793.50
34–410	6" Jointer	1250.00
37–220C	6" Jointer	495.00
37–255	8" Long–Bed Jointer	1550.00
37–315C	Electronic Scroll Saw	999.95
40–601	Wood Shaper	579.95
43–122	11" Lathe	425.00
46–140	All Rockwell includes motors	

FREUD SAW BLADES

10"=5/8" Bore Carbide Tipped 12"=1" Bore

No.	Size	Teeth	Use	Price
LU72M10	10"	40	General	$34.50
LU73M10	10"	60	Cut–off	35.70
LU73M12	12"	72	Cut–off	76.90
LU78M10	10"	80	Plastic	83.50
LU82M10	10"	60	Cut–off	44.95
LU82M12	12"	72	Cut–off	85.95
LU84M11	10"	50	Comb.	37.70
LU85M10	10"	80	Cut–Off	63.50
LM72M10	10"	24	Ripping	36.95
DS306			6" Dado	94.75
DS308			8" Dado	107.70

SUN GOLD SANDING SHEETS

9X11 Aluminum Oxide C Weight

Grit	Pk of 100
150, 120, 100	$21.95
80	23.70
60	28.90
50	32.05
40	38.30

All Freud router bits on sale

9x11 Non–Loading Silicon Carbide

Grit	A WEIGHT Pack of 100
400, 360, 320, 280, 240, 220, 180,	$19.60
150, 120	$5.75 Qt.

BLACK AND DECKER INDUSTRIAL TOOLS

1165	3/8" Angle Drill	$119.50
1179	3/8" VAR. Sp. Drill	74.95
1180	3/8" VSR Holgun®	105.00
1575	3/8" VSR Scrudrill®	119.50
3051	7 1/4" Wormdriver Saw	148.95
3091	10" Miter Saw	199.95
3103	2 Sp. Cut Sawkit	109.95
3105	Var. Sp. Cut Sawkit	119.95
3107	Var. Sp. Orbital Cut	129.25
3265	Laminate Trimmer	145.65
3310	1 1/2 HP Router	145.00
3370–10	3 1/4" Planer	129.95
4010	Palm Sander	48.95
4247	4 1/2" Disc Sander/ Grinder	69.95
6750	Heat Gun	69.75

HITACHI TOOLS

B600–A	14 1/2"BandSaw	$1535.00
CJ65VA	Electronic Jig/saw	149.95
CR10V	Reciprocating Saw	119.95
C6DA	6 1/4" Circular Saw	159.95
C7SA	7 1/2" Circular Saw	69.95
C10FA	10" Miter Saw w/ vise ext.	325.00
C10FB	10" Miter Saw	194.50
C12Y	12" Table Saw	1395.00
D10VC	3/8 Rev. Drill	49.95
DRC–10	Cordless Screwdriver	89.95
F1000A	Planer/Jointer	1315.00
P50	6 5/8" Planer	325.00
P100F	12" Planer	1040.00
SB–110	4x24 Belt Sander w/dust bag	199.95
SO–110A	1/2 Sheet Sander	119.95
SB–75	3x21 Belt Sander –2 Sp.w/dust bag	132.75
SB8T	3x24 Belt Sander 2–Sp w/dustbag	165.00
TR–6	Laminate Trimmer	99.95
TR–8	1 HP Plunge Router	149.90
TR–12	3 H.P. Plunge Router	173.50
W6V	Screwdriver	107.50

SUNGOLD X–WEIGHT SANDING BELTS

Sold in packs of 10 only Outlasts regular belts 2 to 1

Size	Grit	10 Belts	50 Belts
3x21"	120	100 $.98 ea	$.84 ea
Assortment of		80 1.00 ea	.86 ea
		60 1.05 ea	.92 ea
10	$12.95	50 1.07 ea	.94 ea
		40 1.10 ea	.96 ea
3x24"	120	100 1.20 ea	.93 ea
Assortment of		80 1.22 ea	.97 ea
		60 1.26 ea	1.12 ea
		50 1.31 ea	1.15 ea
		40 1.34 ea	1.18 ea
4"x24"	120	100 1.68 ea	1.46 ea
Assortment of		80 1.73 ea	1.51 ea
		60 1.78 ea	1.64 ea
10	$18.95	50 1.85 ea	1.70 ea
		40 1.89 ea	1.76 ea

PORTER CABLE

100	7/8 HP Router	$87.95
167	Block Plane	85.95
309	Laminate Trimmer	79.95
314	4 1/2" Trim Saw	114.95
330	Palm Finish Sander	55.95
337	3x21 Belt Sander w/bag	114.90
360	3x24 Belt Sander w/bag	179.75
362	4x24 Belt Sander w/bag	189.95
505	Finishing Sander	104.75
518	3 H.P. Electronic Router	324.80
690	1 1/2 HP Router	129.95
695	1 1/2 HP Router/ Shaper	210.50
696	Router/Shaper Table only	109.75
3151	7 1/4" Circular Saw	119.50
9627	2 Sp. Tiger Saw Kit	119.95

TITEBOND WOOD GLUE

$12.95 Gal

Watco Danish Oil
Natural, Medium, Dark, Black, or Colors
$5.70 Qt. $17.65 Gal

Free carbide blade with Delta Contractor's Saw, Sawbuck and Mitre Saw!

NEW MAKITA 2030N PLANER – JOINTER

2 Speed, 14.000 cuts per minute. 13 amp hi tech motor runs 7200 RPM. Planes 12 1/2" width smoothly. 4 post support.

2030N $1475.00 ppd

WOOD DOWEL, BUTTON AND PLUG KIT Six bins filled with 600 3/8" and 1/2" dowels, plugs and buttons plus a free dowel center set.

DWKIT $19.95

SQ. RECESS SCREW KIT Six bin unit with 600 #8 woodscrews from 1" to 3", plus screwdriver and power drill bit.

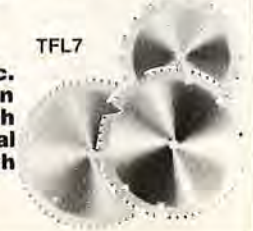
SCDKS $19.95

DELTA UNISAW 1/2 h.p. Motor **$1199.00** w/free carbide blade (Limited quantities. Offer subject to withdrawal at any time.)

TS-251UB

RYOBI 10" MITER SAW W/FREE FREUD LU85M10 CUT-OFF BLADE! Includes vise assembly, extensions and dust bag.

$229.95 ppd



TFL7

FREUD 7¼" BLADE SET 3 pc. set with teflon coating. 12 tooth rip, 24 tooth general purpose, 40 tooth fine cutting.

$59.95 ppd

The Editor's Angle

Here's one that didn't make it

For the first five years of my career at Better Homes and Gardens®, I was a copy editor in the Book Division, and most of that time was spent editing cookbooks. During that time, I recall being intrigued by how carefully the food editors and the test kitchen personnel tested each and every recipe . . . three times, no less. Until a recipe was thoroughly tested, it didn't make it into a cookbook. Some recipes never passed the test for one reason or another.

When *WOOD* magazine came to be, I finally had an opportunity to put the "test kitchen" concept to work—in the *WOOD* woodworking shop. It seemed like such a logical approach to project building. After all, great woodworking projects are a lot like great recipes. You put in a little of this and a dash of that, combine the ingredients in the right way, and you're going to be pleased with the results. We try to give you the right ingredients via good designs and show you how to combine them correctly.

Before we offer you any advice on a woodworking technique or present a project for you to build, you can be certain that we have spent many interesting hours in the shop wrestling with all the unforeseen situations that invariably present themselves. That's not to say we always come up with the "one and only" way to do the job. In fact, if I've learned one thing since beginning this magazine, it's that usually there are several "right" ways to solve a given problem.

What happens to projects that don't pass the test? The good-looking, traditionally styled rolltop computer desk shown above (at least that's the way we envisioned it in the beginning) now sits in an out-of-the-way corner in the basement of our building. Other less substantial projects end up in our scrap bin. You only see our very best efforts.

Print this article

Larry Clayton

UNDOUBTEDLY THE BEST TOOL YOU'LL EVER BUY

"WOODWORKING"
by
IAN KIRBY

A COMPLETE REFERENCE AND TUTORIAL SERIES OF
12 BOOKS
EACH WITH AUDIO TAPE

- The definitive reference library on quality woodworking.
- Clearly set out and extensively illustrated.
- Devised as an easy and practical program for learning.
- Practical exercises, projects and plans in every book.
- Audio tape brings Kirby right into your shop.

THE AUTHOR: IAN KIRBY IS A LIVELY AND AUTHORITATIVE TEACHER WITH A STRONG INFLUENCE ON WOODWORKING IN THE UNITED STATES TODAY. HERE'S WHAT HE SAYS ABOUT "WOODWORKING":
"It has been my ambition to set down all that I learned from the English woodworking tradition, together with my own experience with modern materials, tools and techniques. So here it is: a broad compendium of woodworking knowledge that will enable you to learn the craft correctly and serve you well for a lifetime of woodworking."

SHARE THIS MAN'S VAST KNOWLEDGE OF WOODWORKING AND ENJOY AN APPRENTICESHIP IN YOUR OWN SHOP.

FIRST ISSUE TO BE PUBLISHED
JULY 1985
THEREAFTER BI-MONTHLY

SERIES PREVIEW OFFER $9.95 FOR THE FIRST BOOK AND TAPE NORMAL PRICE $19.95

☎CALL 1-800-LIGNUM-1
OR WRITE TO LIGNUM PRESS
P.O. BOX 900217
ATLANTA, GA 30329

NOW! REDUCE THE RISK AT YOUR TABLE SAW

folds down neatly

WITH THE NEW MOBILE™ SAWING CENTER

OUTFEED ROLLERS

- safe, accurate sawing
- handle panels with ease
- available in 15" and 37" widths
- dual-position table

AND INCREASE FLOOR SPACE

MOBILE MACHINE BASES

- increase shop working area
- maximize usable floor space
- 3 point base will not rock
- locking wheels
- makes machine so easy to use and store
- over 80 standard models

PLANER STAND WITH ROLLERS

- raises planer to proper working height
- provides machine mobility
- five-fold increase in workpiece support
- storage is a snap

NEW

ROLLERTABLE
Rock Solid Support

- adjustable
- portable
- use at any machine

PEDESTAL ROLLER

Discover HTC's many unique products designed only with you, the dedicated woodworker in mind. Find out how you can make your machining safer, increase working area of your shop and accomplish nearly impossible tasks easily, quickly and accurately - **all by yourself!**

CALL TODAY!

HTC PRODUCTS, INC.
120 E. HUDSON S-8
ROYAL OAK, MI 48067
(313) 399-6185

HTC MAKES IT MOBILE

1-800-624-2027 ext. 112

Better Homes and Gardens®

WOOD

THE MAGAZINE FOR HOME WOODWORKERS

AUGUST 1985 **ISSUE NO. 6**

WOOD PROFILE

REDWOOD 25

This towering giant from the California-Oregon coast has become synonymous with outdoor projects that are built to last and last.

CRAFTSMAN CLOSE-UP

BAND SAW SCULPTURES 26

Richard Rothbard didn't take to woodworking in high school shop classes. No matter. Now he's combined his late-blooming skill with sales savvy in a thriving crafts business.

HOMEMADE TOOL

$50 AND ONE WEEKEND WORKBENCH 30

Just what every shop needs—a sturdy workbench with a built-in tool tray and a handy end-vise.

SHOP-TESTED TECHNIQUES

WOOD TURNING BASICS: TURNING BETWEEN CENTERS 35

Five full pages of step-by-step to help you get started.

NOW YOU CAN BUILD IT

QUICK AND PRETTY BUD VASE 40

It's a great project for the beginning turner—we did ours in just 45 minutes. You'll want to keep several on hand as gift items.

LATHE-TURNED ELEGANCE: PEDESTAL DISPLAY STAND 42

Even a lush fern takes a backseat to this graceful table. The black walnut brings a richness that complements the decor of any traditionally styled room.

SCRAP WOOD PROJECT

CLONE BOXES 44

Surprise! These beautiful little boxes-within-boxes are made from laminated scrap wood.

SHOP SAFETY

DUST MASKS AND RESPIRATORS: DETERMINING WHAT YOU NEED 47

Do you wear a mask when your workshop air clouds with sanding dust or finishing vapor? If not, you should.

OUTDOOR FURNITURE

REDWOOD PATIO TABLE 50

Seat six in style with this unique hexagonal table. The benches tuck away when not in use.

BUYMANSHIP BASICS

SHOULD YOU BE USING HARDWOOD PLYWOOD? 55

A look at this versatile woodworking material—how it's made and graded, shopping tips, what's available.

JUST FOR KIDS

FUNTIME FLEET *U.S.S. WOOD* 58

What youngster wouldn't love playing with this battleship in the tub?

TUG-A-LUG 61

Want to turn out a kid's toy in a hurry? Then give this small-but-proud tugboat a try.

GETTING THE MOST FROM YOUR TOOLS

SIX HANDY TABLE SAW HELPERS 62

These nifty items—some tried-and-true and others brand-new—help you and your table saw do your best work.

FURNITURE PROJECT

EASY-DOES-IT BREAKFAST BARSTOOLS 66

Can't find ready-made barstools that match your kitchen decor or counter height? Here's the solution.

TOOL BUYMANSHIP

WOOD LATHES: WHAT'S BEST FOR YOUR SHOP? 68

Here's what's new in wood lathes and accessories.

SHORT-SUBJECT FEATURES

The Editor's Angle 5
Letters 8
Woodworking Vacations 10
Shop Tips 12
Products That Perform 17
Associations 20
Book Reviews 21
How to Level a Project 75
Spindle Turning Tools 79
Wood Anecdote 81
Basic Sawhorses 82
New Generation Screws 84
Magazine Customer Service Information 87

Woodworkers' Hardware ORDER FORM

Qty. Total

Birch Mug Peg ~~$ .37/ea.~~ $ .22/ea.
Birch Shaker Peg ~~$ .42/ea.~~ $ .25/ea.

Birch Furniture Spindles
6 inch ~~$.70/ea.~~ $ .42/ea.
8 1/2 inch ~~$ .85/ea.~~ $ .51/ea.

#S4 Galley Spindle
Birch ~~$.28/ea.~~ $.17/ea.
Oak ~~$.34/ea.~~ $.20/ea.

#S5 Galley Spindle
Birch ~~$.41/ea.~~ $.25/ea.

Wood Wheels
3/4" ~~$5.95/C~~ $3.57/C
7/8" ~~$7.95/C~~ $4.77/C
1" ~~$8.33/C~~ $5.00/C
1 1/4" ~~$13.35/C~~ $8.01/C
1 1/2" ~~$18.35/C~~ $11.01/C
2" ~~$30.00/C~~ $18.00/C

#AP1 Axle Peg
Fits 1" to 2" Wheel ~~$6.95/C~~ $4.17/C

Wood Cargo (Milk Can, Oil Drum, Pickle Barrel)
Oil Drum ~~$3.85/10~~ $2.31/10
Milk Can ~~$3.00/10~~ $1.80/10
Pickle Barrel ~~$3.85/10~~ $2.31/10

Screw Hole Buttons
3/8" ~~$2.90/C~~ $1.74/C
1/2" ~~$2.95/C~~ $1.77/C

Dowel Pins 3/8"x2" ~~$2.95/C~~ $1.77/C

Wood Knobs w/Screws
3/4" ~~$1.50/10~~ $.90/10 ~~$12.95/C~~ $7.77/C
1" ~~$2.40/10~~ $1.40/10 ~~$21.40/C~~ $12.84/C
1 1/4" ~~$2.50/10~~ $1.50/10 ~~$23.00/C~~ $13.80/C
1 3/4" ~~$3.70/10~~ $2.20/10 ~~$34.65/C~~ $20.79/C

Saw Tooth Hangers ~~$6.95/C~~ $4.17/C

Brass Plt. Picture Hanger ~~$7.95/C~~ $4.77/C

Clock Movements w/Hands Q72
~~$10.80/ea.~~ $6.48/ea. ~~$49.50/5~~ $29.70/5

Lazy Susan Bearing
3" ~~$1.15/ea.~~ $ .69/ea.
4" ~~$1.60/ea.~~ $ .96/ea.
6" ~~$2.60/ea.~~ $1.73/ea.
12" ~~$8.95/ea.~~ $5.37/ea.

Brass Plated Candle Cup
~~$5.00/10~~ $3.00/10 ~~$49.00/C~~ $29.40/C

Brass & Porcelain Hook ~~$4.95/ea.~~ $2.97/ea.

Brass Plated Hinges
#910 Butt Hinge ~~$1.65/10~~ $.99/10
#928 Butt Hinge Brass ~~$2.80/10~~ $1.68/10
#F124 Screw for Above ~~$4.00/C~~ $2.40/C

Clipboard Clips
3" ~~$ .59/ea.~~ $ .35/ea.
6" ~~$ .99/ea.~~ $ .59/ea.

Plastic Shelf Pins ~~$9.00/C~~ $5.40/C

Note: C = 100

☐ Catalog $1.00 or free with order Total Order
☐ Minimum Order is $25.00 MN Res.- 6% Tax

Order Amount :	Shipping :
$25.00 to $49.99	$3.50
$50.00 to $99.99	$4.50
Over $100.00	$5.00

Shipping
Total Enclosed
☐ Visa ☐ Master Card

Alaska, Hawaii, Canada & APO Orders Add $6.00

MONEY BACK GUARANTEE!

SIGNATURE
CARD NO EXP DATE
NAME
ADDRESS CITY
STATE ZIP PHONE ( )

MEISEL HARDWARE SPECIALTIES
P.O. Box 258R4, Mound, Minnesota 55364 • (612)472-5544

LETTERS

Print this article

We welcome comments, criticisms, suggestions . . . even an occasional compliment from readers. While the volume of mail we receive makes it impossible to answer every letter, we publish excerpts in every issue of the magazine. Send letters to:

Letters Editor
Better Homes and Gardens®
***WOOD* Magazine**
1716 Locust Street
Des Moines, IA 50336

READER NEEDLES *WOOD* ABOUT CACTUS COLUMN

Perhaps it is the lingering effect of certain strong potions made of cactus juice which prompted someone on the staff to agree that *Cereus giganteus* is a tree, and a hardwood at that ("Saguaro," *WOOD*, April, 1985, page 83).

—Dick Landis, Issaquah, Wash.

Dick, we referred this prickly problem to WOOD *consulting wood technologist Paul McClure, who lives and works right in the heart of saguaro country in Tempe, Ariz. Paul says there's no doubt as far as he's concerned—the saguaro is indeed a tree and a hardwood. Here's a further reference from* The Complete Trees of North America *by Thomas S. Elias (Van Nostrand Reinhold, New York, 1980): "Four native species [of the Cereus genus]—the Saguaro, the Deering, and Key West cephalocereus, and the organ-pipe cactus—are considered trees."* All meet the criteria of a tree as a woody plant that usually grows to at least 16′ and has a single trunk.

WOOD WOMAN

WOOD *Editor Larry Clayton asked to hear from a few women woodworkers in his April column, so we were tickled when the mailman brought this note:*

Love the magazine! I am an "intermediate" woodworker who sometimes needs reference materials, pictures, and ideas to make certain projects "click." Some publications are too sophisticated . . . Not so with *WOOD*. It's down to earth.

—Mary Wexell, Cambridge, Ill.

Thanks to Mary and the other women readers who wrote! We'll do our best to keep you happy.

PLANE TALK

We're not in a position to make our "Letters" page a buy and sell column, but we'll try to spread the word occasionally in special instances such as this one:

In your October, 1984 issue on page 76 is a picture of a Stanley no. 1 bench plane that now is a collector's item valued at $400 to $650. I've had this plane for the last 40 years. It's in excellent condition. If any collectors are interested, let them contact me.

—William K. Annetts, 181 Rombout Ave., Beacon, NY 12508

WILL THE REAL DISSTON PLEASE STAND UP?

(Regarding the handsaw pictured on page 100 of the February issue of *WOOD* and identified as a Disston): I have never seen this saw in the Disston catalog. As for the bending of the saw and its snapping back "straight as a die," we do this with our Sandvik saws every day to show the superior steel we are using.

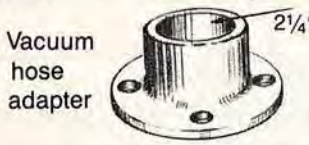
We have manufactured the steel used in our saws in our own steel mills since 1862. What is equally important in a saw blade is the teeth, of course. We make most of our saw models with ground teeth as compared to filed and stamped teeth . . . I will challenge a similar saw anytime.

—Hakan Hellstrand, National Sales Manager, Sandvik Saws and Tools, Scranton, Pa.

The handsaw in the photo was indeed an Atkins, not a Disston. WOOD *apologizes for the mixup. As for Mr. Hellstrand's challenge—any takers?*

VACUUM HOSE COUPLING

In our April issue we featured a router table project that requires two vacuum hose adapters. Several readers wrote to request a source for the adapters. If you had any trouble finding them, send $7 plus $2.50 for postage and handling for two adapters to: Shopsmith, Inc., 750 Center Dr., Vandalia, OH 45377. (The folks at Shopsmith refer to the adapters as ferrules.)



A GREAT IDEA!

At WOOD, *we love to hear from readers who have improved on the methods we used in a project. This month we heard from several sharp readers who had suggestions about the three-ring binder jig featured in our April issue. Here's what one of them suggested:*

Ten years ago I hit upon a super simple idea that gives me perfectly clean holes every time. I created a paper drill. Get a 3″ piece of steel tubing ¼″ in diameter (available at auto parts stores). Put it in the chuck of your electric drill (hand or press). Turn on the drill and, as it rotates, file or grind the end to form a knife edge. Remove the tube from the drill and cut a section from the sidewall of the tube to remove the paper disks out of the magazine.

To use the paper drill: Put the magazine drill back in the electric drill chuck. Identify the spot you want to drill on the magazine by tracing the holes in a piece of loose-leaf paper that was laid on top of the magazine. Hand-hold the magazine on top of a piece of scrap which acts as a backing material and drill a nice clean hole every time. The knife edge also can be created by taking material off the inside wall of the tube with a countersink. ■

—Michael K. Patrick, Manchester, N.H.

As easy as 1, 2, 3... 4 and 5.

1 It's a 10" Table Saw with 3-1/4" depth-of-cut and huge 50" ripping capacity.

2 It's a 16-1/2" Vertical Drill Press with locking quill feed for accurate depth control.

3 It's a Horizontal Boring Machine that makes doweling operations a snap.

4 It's a 34" Lathe with 16-1/2" swing capacity for turning table and chair legs, or large bowls.

5 It's a 12" Disc Sander with 113 sq. in. of sanding surface to reduce stock up to 6" thick in a single pass.

The MARK V combines these five major power tools in one space-saving, economical unit. You can perform change-overs in less than 90 seconds.

Plus, the MARK V's 5-in-1 versatility and built-in accuracy make it easy to achieve professional results on all your projects.

The MARK V is the tool to start with... the system you grow with. You'll find a full range of MARK V Accessories to help you do the most sophisticated woodworking operation with ease.

The Shopsmith® Difference

With Shopsmith you get a dedication to woodworking, education, and buyer protection. We believe in the virtues of quality, value, pride and craftsmanship, which show in our educational training and products.

Your Special "Bonus"

Learn how the MARK V can help you do more projects more professionally. Send for your FREE MARK V Information Kit today! Included in the kit is *How To Determine Your Best Power Tool Buy.*

You'll also receive a FREE one-year subscription ($12.00 value) to *Hands On, The Home Workshop Magazine* packed with project ideas and helpful tips. You are under no obligation. So mail your card today!

Phone Toll Free: 1-800-821-2105
In Nebraska: 1-800-642-8788

Shopsmith Inc.
For better woodworkers and those who want to be.
6640 Poe Avenue
Dayton, Ohio 45414-2591

Quality woodworking tools made in the U.S.A.

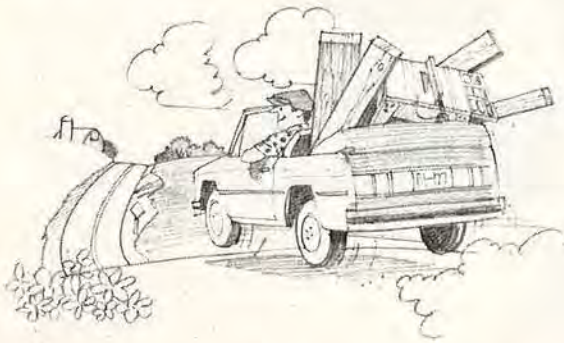
© Shopsmith, Inc., 1985
Shopsmith ® is a registered trademark of Shopsmith, Inc.

Mail this valuable coupon TODAY!

☐ **YES!** Please send me a Free MARK V Information Kit including the informative booklet *How To Determine Your Best Power Tool Buy.* And enter my name for a FREE one-year subscription to *Hands On* magazine. I understand I am under no obligation.

Name _____
Address _____
City _____
State _____ Zip _____
Date _____ Initial _____
☐ I currently own a Shopsmith power tool.

Dept. 375D



SHARPEN YOUR SKILLS ON A WOODWORKING VACATION

As the woodworking hobby catches on, so do the learning opportunities. Woodworking workshops—offered by many public and private colleges and universities, crafts centers, companies, and individuals—flourish year-round, especially during the summer. You still have time to sign up for a summer course or two, but hurry—they fill up fast these days.

Costs vary from $20 for a two-hour seminar to $500 or more for multiweek sessions (extra charges for room and board where applicable, of course). Following is a sampling of offerings. We suggest that you contact sources directly for fees, dates, and complete course descriptions. Also check locally for seminars and workshops sponsored by retail woodworking suppliers.

• **College of the Redwoods,** *Mendocino Coast Education Center, 440 Alger St., Fort Bragg, CA 95437 (707/964-7056).* 4- to 5-week workshops covering techniques and joinery, woodworking projects. Late June through August.

• **Oregon School of Arts and Crafts,** *8245 S.W. Barnes Rd., Portland, OR 97225 (503/297-5544).* Cabinetmaking, finishing, Japanese woodworking. Late June through August.

• **Woodturning Workshops,** *Craft Supplies U.S.A., 1644 S. State St., Provo, UT 84601 (801/373-0917).* 5-day workshops focused on all aspects of turning. Mid-June through September.

• **The University of Akron,** *Center for Wood Design and Craftsmanship, Akron, OH 44326 (216/375-7575).* 2- to 4-day workshops and seminars covering power tools, jigs, furniture design and construction, boat-building. Late June and September.

• **The University of Wisconsin—Stout,** *Office of Continuing Education, Menomonie, WI 54751 (800-45-STOUT out-of-state, 800-22-STOUT in state).* Festival of Wood Workshop, from tools to toys. Late June.

• **Brookfield Craft Center, Inc.,** *P.O. Box 122, Brookfield, CT 06804 (203/775-4526).* 2- to 5-day workshops and classes including turning, carving, chair making, various boat-building techniques. Early July through August.

• **Villa Maria Wood Workshops,** *P.O. Box 37051, Minneapolis, MN 55437.* Up to 6-day workshops on carving techniques. Late July to early August.

• **Conover Workshops,** *18125 Madison Rd., Parkman, OH 44080 (216/548-3481).* 5-day workshops on turning, hand tools and joinery, Windsor chair-making. Mid to late June.

• **Arrowmont School of Arts and Crafts,** *Box 567, Gatlinburg, TN 37738 (615/436-5860).* 5-day workshop classes covering wood construction, laminated lathe work, spindle turning, and faceplate work. July to mid-August.

• **Primrose Center for Fine Woodworking and Furniture Design,** *401 W. Railroad, Missoula, MT 59802 (406/728-5911).* 7-day workshop on traditional hand tool joinery. Mid-July.

• **Penland School of Crafts,** *Penland, NC 28765 28765 (704/765-2359).* 2- to 3-week workshop courses including tools, design, furniture construction. carving, techniques. June through September.

• **Shopsmith's Woodworking Academy.** 2-hour lectures to 4-day workshops about turning, joinery, toy-making, raised panels, other topics. Offered year-round. Held in the below-listed cities; call number given for dates and information:
Foster City, California (415/572-0800)
Tucker, Georgia (404/939-8141)
Indianapolis, Indiana (317/849-0193)
Florence, Kentucky (606/371-2232)
Richfield, Minnesota (612/866-3526)
Colonie, New York (518/459-2201)
Columbus, Ohio (614/885-7200)
Dayton, Ohio (513/898-9325)
Tigard, Oregon (503/684-1428)
Richardson, Texas (214/644-2615)
San Antonio, Texas (512/655-3093)
Virginia Beach, Virginia (804/460-5655)
Renton, Washington (206/226-2500)

• **Russ Zimmerman Turner's Workshop,** *RFD 3, Box 242, Putney, VT 05346.* 2-day workshop including turning tools, faceplate and spindle turning. Offered year-round.

• **Davis & Elkins College,** *Augusta Heritage Arts Workshop, Elkins, WV 26241 (304/636-1903).* 5-day and longer workshop classes on guitar construction, folk carving, treenware, white oak basketry. Mid-July to mid-August.

• **Boston University,** *The Program in Artisanry, 620 Commonwealth Avenue, Boston, MA 02215 (617/353-2022).* 3-week courses on furniture design and construction. July/August.

• **Haystack Mountain School of Crafts,** *Box 87, Deer Isle, ME 04627 (207/348-6946).* 2- to 3-week workshops covering plain and tapered lamination for furniture, wood sculpting. Late June through mid-August.

• **Norwegian Craft Workshops at Vesterheim,** *Norwegian-American Museum, Decorah, IA 52101 (319/382-9681).* 2- to 5-day workshops on Norwegian figure, chip, and relief carving; stave construction; bentwood. Late June through August.

ENGLAND

John Sainsbury's Studio for Woodcraft, *1, Lichfield Drive, Brixham, South Devon, England TQ5 8DL (6204/08045).* 2-day workshop courses on faceplate turning, turning between centers, thin wall and wet wood turning, carving, tools, materials. All year.

CANADA

Bert Thompson's Canadian School of Woodturning, *1069 Southdown Road, Mississauga, Ontario, Canada L5J 2Y1 (416/823-5937).* Lessons on turning between centers, tools, and sharpening; architectural turning. Year-round. ■

Your home workshop can PAY OFF ... ...BIG!

This One Low-Cost Power Tool—

SAWS to desired Width...
PLANES to desired Thickness...
MOLDS all popular Patterns...

—All at once or separately... All By Power Feed!

The Only Complete Workshop Tool Of Its Kind In The World!

The Only 12" Planer That Is UL

Try The Foley-Belsaw In Your Own Shop On Our **30-DAY FREE TRIAL OFFER**

Mail Coupon Below For Complete Details!

From the Day It Arrives... the Planer will make and save you money. With shortages and inflation driving lumber prices sky-high, this versatile power tool quickly pays for itself by easily converting low cost rough lumber into high value finished stock. In just one pass turn out your own quarter-round, door and window stop, casing, tongue-and-groove... all popular patterns. Other operators are making cases for grandfather clocks, furniture, picture frames, bee hives, bed slats, surveying stakes... all kinds of millwork.

Built For Pros... Priced For Home Craftsmen... it is engineered and built to industrial standards, but factory-direct selling keeps the price low. Handles tough oak and walnut as easily as pine, and so simple to operate even beginners with no experience can use it.

Start Your Own Business! Earn Extra Income Right At Home.

With just this one low cost power-feed machine in a corner of your garage or basement, you're set up to supply lumberyards, cabinetmakers, carpenters, remodelers, contractors and hobbyists in your area with custom-planed lumber, trim, molding... ALL of their millwork requirements. You can supply picture molding to art shops, hardware and department stores, or sell direct to framing shops. All standard patterns are available from stock, or we'll custom grind a knife to your own special design or sample.

You Take* NO RISK! *The Planer/Molder/Saw Is Backed by Our Exclusive 100% Guarantee of Satisfaction:

• "Try the Foley-Belsaw in your shop for a full 30-Days and put it to work for you. Give it a thorough test and make it prove that it can do everything we say it will... use it just as much as you want. Then if you are not completely satisfied, just send it back and we'll return every penny you sent. And YOU are the sole judge! There are no questions asked... there are no fine print 'use' charges. Our flat guarantee is that YOU must be 100% satisfied or you get your money back."

Does The Foley-Belsaw Pay? YOU BET!

READ WHAT OWNERS SAY:

A Good Investment • Robert Sawyer, Roseburg, Oregon: *"I believe that the Foley-Belsaw is the best investment I ever made. I've been a planer man for years and am now retired. The Foley-Belsaw has earned me $60,000 extra income in the past eleven years."*

Pays For Itself: • R.S. Clark, Springfield, Ohio: *"I bought a batch of walnut in the rough, and after planing it on the Foley-Belsaw I figured up the money I saved. It was enough to pay for two-thirds the cost of the Planer. It really does a good job."*

More Than Expected • Stephen Schultz, Orangeville, Penna.: *"This machine pays for itself by making money out of scrap boards. It is a very well built machine and I confess it is more than I really expected for the price. It does everything you say it will."*

... And Foley-Belsaw Is The Choice Of Professionals:

"I recommend Foley-Belsaw Planer-Molder-Saw as the most useful shop tool any craftsman could own. We use one every day in the Workbench model shop, and couldn't get along without it."

JAY HEDDEN — Editor WORKBENCH Magazine

FREE BOOKLET! Get FREE Book with facts and full details ... RUSH COUPON TODAY!

Just Mail Coupon ... NO OBLIGATION and NO SALESMAN Calls!

ACT NOW! *Coupon Brings Full Details!*

If coupon has been removed, just send postcard with name and address to:

FOLEY-BELSAW CO.
90667 FIELD BLDG.
KANSAS CITY, MO 64111

FOLEY BELSAW

FOLEY-BELSAW CO.
90667 FIELD BLDG.
KANSAS CITY, MO 64111

☐ **YES**, *please send me the FREE Booklet that gives me complete facts about your Planer-Molder-Saw and full details on how I can qualify for a 30-Day Free Trial right in my own shop. I understand there is No Obligation and that No Salesman will call.*

NAME _____

ADDRESS _____

CITY _____ **STATE** _____ **ZIP** _____

Print this article

In woodworking, as in life, no one knows it all. But through experience, we all discover—or stumble onto—better, safer, faster, or easier ways to do things. When we devise interesting tips or techniques, we'll share them with you in this column. And when you send us your favorites, we'll pay you $25 for each submission we publish. No shop tips can be returned. Mail your tips to:

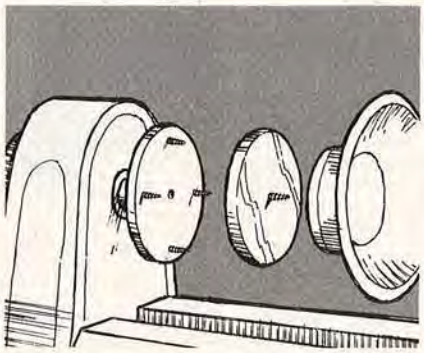
Shop Tips
Better Homes and Gardens®
***WOOD* Magazine**
Locust at 17th
Des Moines, IA 50336

Screw center comes to the rescue

You want to cut wood, not metal, but it's sometimes difficult to avoid dinging your lathe tools against the faceplate while turning the entire profile of a piece. You also encounter this frustration when you turn small pieces such as knobs on your lathe.

TIP: Make a wooden screw center or first screw your workpiece to a wooden disc, then attach either to the faceplate. Now you have a wooden buffer plate between the workpiece and the metal faceplate to eliminate those dings. If your faceplate isn't drilled for a center screw, mount the plywood washer to the center of the project with a wood screw; attach the disc to the faceplate as usual. If your faceplate is drilled for a center screw, fasten directly through the faceplate and disc and into the project.

—Sean O'Daniel, Lebanon, Ky.



Start out clean

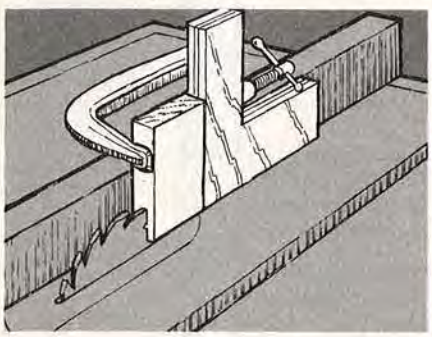
Nozzles on paint sprayers are difficult to get thoroughly clean. Many times, dried residue clogs the nozzle and sends paint spitting around the room.

TIP: Clean the nozzle as best you can after use, then store it submerged in fresh thinner in the sprayer's container. Before you start your next spraying job, pour out the thinner, dry off and attach the nozzle, and enjoy one less frustration.

A safe strategy for cutting small pieces

Cutting small pieces of stock on a table saw or router always is a challenge; safely cutting the ends of pieces can leave you in a bundle of nerves.

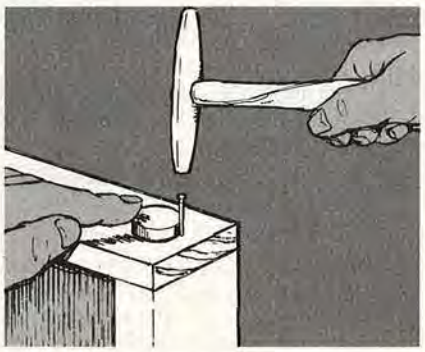
TIP: Make a right-angle jig block like the one shown in the illustration from plywood and clamp the small piece to the jig. The jig also serves as a chip breaker—an advantage over a tenoning jig, which doesn't follow behind the workpiece the way this jig does.



How to outsmart a nail

In a tight spot, it can be impossible to get your fingers around and start a nail or brad.

TIP: A small magnet will hold a brad or nail upright while you tap it into the wood. (Note: This tip also helps prevent black and blue fingers, sometimes referred to as "hitting the wrong nail.")

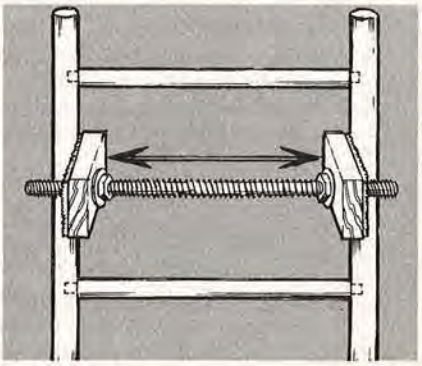


Easy does it

Taking furniture apart for regluing often requires breaking a sturdy glue bond. Improperly done, too much pressure can damage the pieces.

TIP: Pop apart glued joints by applying inside pressure with an inexpensive device you can make at home. Continuous-thread rod, sometimes called all-thread, is the key to this mechanism. Drill a hole for the rod through two blocks of wood and then line one side of each block with carpet or foam as shown. To apply even pressure and break the bond without damage, just tighten the washer and nut inside each block.

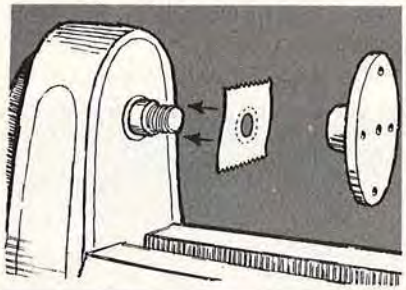
—Donald F. Kinnaman, Phoenix, Ariz.



Slick solution

Thread-on faceplates sometimes tend to lock to the live spindle of a lathe and this makes them difficult to remove.

TIP: Before you screw on the faceplate, slip on a single layer of waxed paper and tighten the faceplate to the live spindle as usual. The waxed paper "washer" will make it easier to loosen the faceplate.

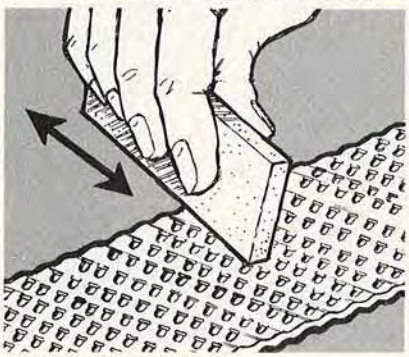


Surform sharpening

The Stanley Surform and similar forming tools can remove a lot of stock, but the blades eventually dull.

TIP: Sharpen the rasp-like blades with the small stones used for pocket knives. Rows of teeth run diagonally across the length of the blade, and each row has a "lead side" with cutting edges near the top. Hold the stone firmly against the inside face of the lead side and run the stone back and forth through the groove. Repeat for each row until the entire blade is sharpened. Between sharpenings, the blade can be quickly renewed by running a stone along the length of the blade in the direction the cutting faces are pointing.

—Mary Butcher, Hacienda Heights, Calif. ■



The New Delta 6" Motorized Jointer.

Built to create heirlooms. Bound to become one, too.

Ask around. There are lots of folks still using their Dad's old Delta machinery. And the new Delta Jointer is built to last a lifetime. At least. Its solid cast-iron construction and durable 3/4 h.p. induction motor could provide power and precision for generations to come.

Not only will your Delta Jointer become a family heirloom, but so will the projects you make with it. They'll last because every edge will be true. Every joint, tight. Every surface, flawless. An adjustable fence, and a built-in rabetting ledge help make it easy.

The New Delta 6" Jointer. It has fifty years of our experience in it. Why shouldn't your family get that much out of it?

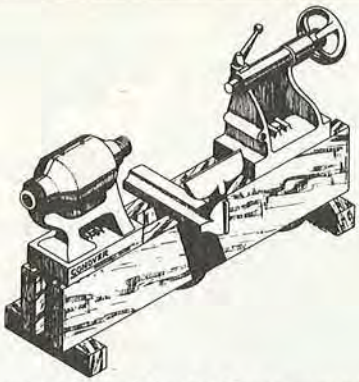
Call toll-free for the name of your Delta distributor. Delta International Machinery Corp. (formerly Rockwell Power Tool Division), 800/438-2486 (in PA, 800/438-2487).

DELTA

Behind Our New Name Is Our Old Reputation.

CONOVER

Woodcraft Specialties, Inc.
18121 Madison Road, Parkman, OH 44080
216/548-3481



Tradition is Back with

THE CONOVER LATHE SET

We manufacture the Conover lathe set in our Parkman, Ohio factory to insure its super high quality. It has heavy cast iron construction, precision Timken roller bearings, a 16" swing, and unlimited center distance. You can set it up as a bowl lathe or turn porch posts—your option!

The Conover Lathe Set is mounted on a bed of 8 quarter timbers, which you can make yourself—to any length. A wood bed absorbs shock better than metal and facilitates an affordable price. Our lathe indexes to 12 positions and is suitable for heavy face plate turning (inboard and outboard), metal spinning, and spindle turning. It has a full range of exciting accessories.

OK Conover,

_____ Enclosed is $1 for your 16-page catalogue detailing the Conover Lathe Set and your entire line of handmade tools.

_____ Send me _____ Conover Lathe Set(s) @ $895 each.

Enclosed is _____ Cheque _____ M.O. _____ MasterCard/Visa

Card #_____ Exp. Date_____

Name_____

Address_____

City_____ State_____ Zip_____

Phone_____

Ken's NEW full scale plans with photos and easy step-by-step instructions

EDITION NO. 3

Wooden Memories T.M.

NEW ANTIQUE AUTOS FOR TOY OR DESK SETS

Featuring BEEZER the BURRO

A sturdy lovable little burro. Use as a toy or a magazine rack.

☐ Rocking Burro with lift-off magazine rack plans . . $9.00

☐ 4 Antique Auto Toy or Desk Sets with 2 desk set designs $10.00

☐ All plans . . $16.00 (save $3.00)

Mailed 3rd class FREE. For 1st class mail, add $1 for one plan, add $2 for all plans.

Pa. residents add 6% sales tax

Send check or money order (U.S. Funds only) to:

WOODEN MEMORIES Dept.WO Box 490 Russell, PA 16345

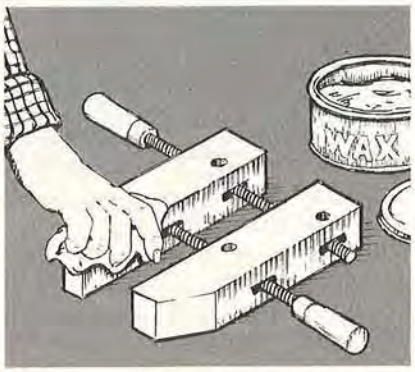
TIPS FROM YOUR SHOP (AND OURS)

Clamp care tip

Glue squeeze-out sometimes dries and adheres to the face of hand-screw clamps. Later, projects that have been clamped turn out with marred surfaces.

TIP: Apply a coat of paste wax to the face of each jaw of your clamps to prevent glue build-up. It's also a good idea to maintain a light coat of wax on metal clamps—this will help you prevent rust from forming and discoloring project surfaces.

—Gary Scholl, Mancelona, Mich.



The once-and-for-all cure for wobbly chairs

Despite your best efforts to make a lasting repair, a troublesome screw continues to loosen on a wobbly chair.

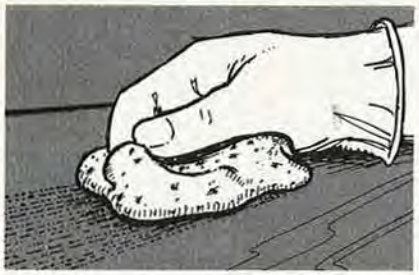
TIP: Remove the screw and dip the threads in epoxy, then reinstall and allow it to dry. (Epoxy has more holding power than wood-worker's glue.) If the screw hole has worn too large for a tight fit, use toothpicks or slivers of wood to help fill the opening.

TIPS FROM YOUR SHOP (AND OURS)

Fuzz buster

How many times have you smoothly finished new wood, only to have the grain raised by stain, paint, or varnish? You've got a bad case of fuzz, friend.

TIP: Before you apply the first coat of finish, wipe down the entire project with a damp sponge or cloth. Allow the wood to dry, then remove all the fuzz with fine steel wool or sandpaper. (Be sure to use a clean tack cloth to remove dust before applying stain or finish to ensure smooth results.)

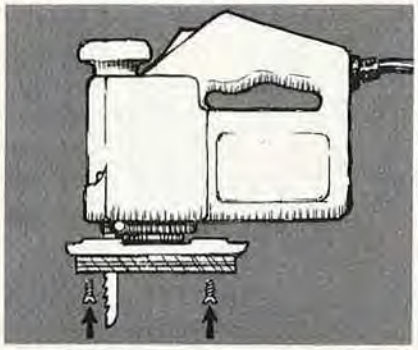


Sharp way to economize

No matter how long the jigsaw blade is, just a few of the teeth are doing the cutting for most operations. Those teeth quickly become dull.

TIP: Add an auxiliary plate to the bottom of your jigsaw to extend the life of blades. The thickness of the plate will depend on the material being cut, but the plate needs to be at least as thick as the length of the saw stroke. As a bonus, the auxiliary plate won't allow the blade to wander as much. Use wide double-sided adhesive tape to mount the plate. ■

—R.T. Dunnington, Centerville, Ohio



STATE-OF-THE-ART
Resin Over Resin Bonded
SANDING BELTS
FREE BONUS

These belts were manufactured for durability and performance. Their economy shows up in their productivity. There are no better belts made!

We guarantee your complete satisfaction. If these belts are not the best, by far, of any you have ever had, return them within 90 days — used and unused — for a full and complete refund, including return postage.

As a free bonus, just for giving us a chance at your business, you will receive, with your order, a belt and disc restorer. It unclogs your abrasives like magic just by holding it against the moving belt or disc, and, whether you keep the belts or return them, you get to keep the free bonus.

GRIT SIZES AVAILABLE FOR EVERY BELT: 50; 60; 80; 100; 120; 150; 180; 240.

Prices are for 1 pack of 10 belts in 1 grit. Sizes 4x36 and 6x48 are packed 5.

3x18 ... 10 for..... $ 9.95
3x21 ... 10 for..... $10.95
3x24 ... 10 for..... $11.95
4x21¼.. 10 for..... $13.95
4x24 ... 10 for..... $14.95
4x36 .... 5 for..... $ 9.95
6x48 .... 5 for..... $21.95

***CALL TOLL FREE* 1-800-243-1037** (In Connecticut, 797-0772)
Or write: The Fine Tool Shops, Inc. Dept. **WMA4**
20 Backus Avenue, Box 1262, Danbury, CT 06810

No. of Packs	Belt Size	Grit	Price Per Pack	Total
1	Belt Restorer			**FREE**
1	Full Color Tool-Abrasive Catalog			**FREE**
			Subtotal	
			Shpg. & Hndlg.	**$2.00**
			CT Sales Tax	
			TOTAL	

$____ enclosed ☐ Charge my: ☐ VISA ☐ AmEx ☐ MasterCard
Account # _____
Exp. Date _____
Name _____
Address _____
City/State/Zip _____
Telephone (___) _____

Our catalog doesn't just sell you things. It teaches you things.

The Garrett Wade Catalog is a new, 212-page collection of woodworking hand tools, machinery, finishing supplies and accessories that are simply the finest available. Anywhere.

And besides offering quality tools from around the world, we also give you a lot of quality advice. On woodworking techniques. On picking the proper tool for a particular job. On finishing, sharpening, clamping and more.

The catalog is filled with superb photography, honest specifications and reliable descriptions. It's neatly divided into seventeen sections, including a section on our Swiss INJECTA INCA power tools. And throughout the year, our catalog owners will receive several handy supplements–*free of charge.*

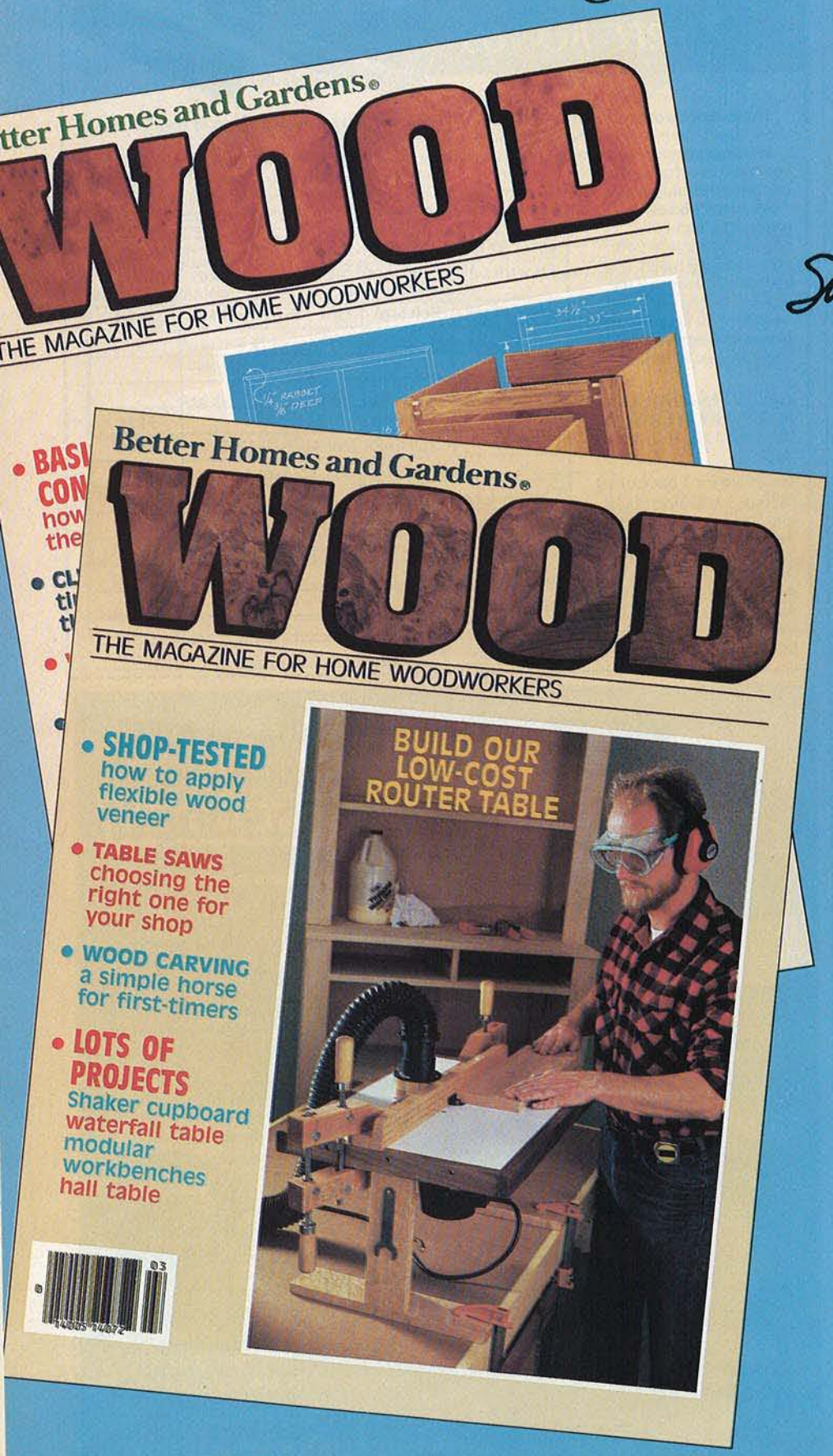
Just send in the coupon below with $3.00, and we'll send out your copy of the 1985 Garrett Wade Catalog. It just may prove to be the most useful tool you own.

Garrett Wade Co., Dept. 255
161 Avenue of the Americas
New York, N.Y. 10013
Gentlemen:
Send your complete 212-page catalog of woodworking tools, machinery, and accessories. Enclosed is $3.

☐ I would like *only* the following sections of the catalog, for 50¢ each:
☐ INJECTA INCA ☐ Carving ☐ Finishing

Enclosed is $_____
Name_____
Address_____
City_____
State_____ Zip_____

Get the most out of your home woodworking with...


Better Homes and Gardens®
WOOD
THE MAGAZINE FOR HOME WOODWORKERS
• SHOP-TESTED how to apply flexible wood veneer
• TABLE SAWS choosing the right one for your shop
• WOOD CARVING a simple horse for first-timers
• LOTS OF PROJECTS
Shaker cupboard
waterfall table
modular workbenches
hall table
BUILD OUR LOW-COST ROUTER TABLE

CHARTER OFFER

1 Year (6 issues) $15

SAVE $2.70 off single-issue rate

Subscribe now...

..and enjoy home delivery of BETTER HOMES AND GARDENS® WOOD magazine. Whether you're an advanced craftsman or just beginning, WOOD shows you how to get the most satisfaction out of your woodworking. And it's packed full of all the solid woodworking know-how you need in your home workshop! Like —

Shop-tested techniques, from how to edge-join boards to directions for perfect miter joints.

Projects galore — from easy one-nighters to furniture and decks!

Advice on tools and materials. What to look for... which brand to buy... where to get them.

Step-by-step illustrations. With cutting lists, cutting diagrams and assembly instructions.

PLUS shop tips... workshop set-ups... tools to make — and more!

ORDER NOW — and enjoy Charter Savings *and* home delivery! Just fill out the attached Certificate and drop it in the mail — postage is paid.

Mail today!

BETTER HOMES AND GARDENS® WOOD • Locust at 17th • Des Moines, Iowa 50336

No more changing blades for rip, miter and crosscut – or for different kinds of material!

MR. SAWDUST MAKES EVERY KIND OF CUT A LOT BETTER AND A LOT LONGER!

America's Foremost Power Tool Professional

MR. SAWDUST I
All-Purpose for Radial Saws

The only blade you can buy with "Forrest-400" carbide! Slices through every kind of hard, soft or plywood — gives a *polished* cut up to *three times longer* than ordinary mass-produced blades.

	WAS	NOW ONLY
10" 60T.	$162.00	**$113.40**
9" 60T.	156.00	**109.20**
8" 60T.	150.00	**105.00**

MR. SAWDUST II
All-Purpose for Table Saws

Again, "Forrest-400" carbide — and another great Jim Forrest design! Every cut is a *planer* cut — with or across the grain. Gives you a sheer cut in fine plywoods — top *and* bottom. And flawless cuts in thick hardwoods.

	WAS	NOW ONLY
10" 40T.	$156.00	**$109.20**
30T.	135.00	**94.50**
9" 40T.	146.00	**102.20**
30T.	125.00	**87.50**
8" 40T.	136.00	**95.20**
30T.	115.00	**80.50**

6" Dampener $23.00
5" Dampener 22.00
4" Dampener 20.00

NOW... ORDER the one blade that will *outlast* you!
PHONE TOLL FREE! 1-800-526-7852
(In NJ: 201-473-5236)

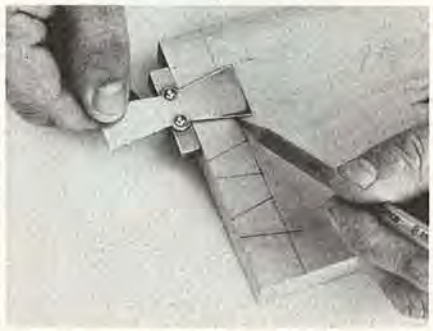
FORREST

FORREST MANUFACTURING COMPANY, INC., 250 DELAWANNA AVE., CLIFTON, N J 07014

We're proving *everything* we say in our ads — in major shows across the country. For COMPLETE information, ask for "The Cut is Everything" (includes Dado sets) — and "Mr. Sawdust II" (Ultra-Smooth Planer Saws).

PRODUCTS THAT PERFORM

Print this article



Beauty in the brass

If you lay out hand-sawn dovetails, you'll enjoy using this handy little marking tool. Imported from England exclusively by Woodcraft, the gauge has solid pinned construction for years of dependable service. The manufacturer designed one end for use with softwoods, the other, steeper-angled end for hardwoods. The tool fits handily in a pocket—and in a brass tool collection. *Brass Dovetail Gauge. Available for $14.95 postpaid from Woodcraft, 41 Atlantic Ave., P.O. Box 4000, Dept. W, Woburn, MA 01888.*

Hide blemishes and sins

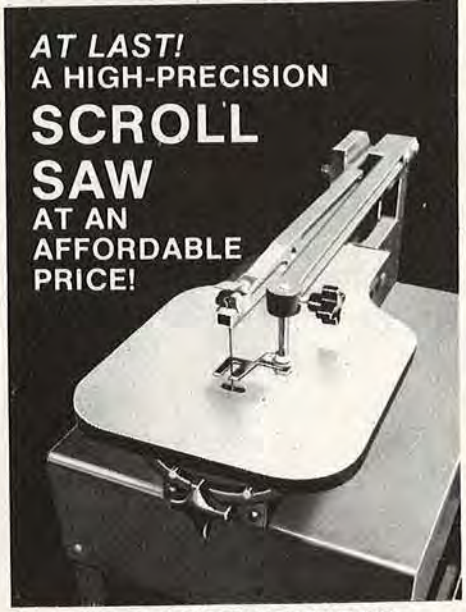
No matter how hard some of us try, we just can't avoid an occasional "Oops!" in our projects. We've called on FIX Wood Patch to rescue us in several instances, and it's risen to the occasion every time. FIX dries quickly, sands easily without clogging, and accepts stain evenly. (By the way, the lids are at the bottom of the cans to keep the ingredients mixed.) *FIX Wood Patch, manufactured by the Darworth Company of Avon, Conn. Available at retail outlets in seven colors and natural; $1.79 for ¼ pint.*

Hone with precision

You can't beat the accuracy of this brass bevel guide, manufactured and sold exclusively by Leichtung. Simply unscrew the three piece-unit and select the angle you want (15, 20, 25 or 30 degrees) to set your tool rest for grinding or honing. When you've finished, use the assembled guide to double-check the cutting angle of your chisel or plane iron, as shown in photo. *Brass Bevel Guide. Available for $7.95 postpaid through Leichtung, 4944 Commerce Parkway, Dept. W, Cleveland, OH 44128.*

Continued

AT LAST!
A HIGH-PRECISION
SCROLL
SAW
AT AN
AFFORDABLE
PRICE!



THE SAW THAT TURNS BEGINNERS INTO EXPERTS!

Use this high-precision saw to make hundreds of profitable, unusual items . . . toys, name-bars, filagree work, clocks, holders . . . the list is nearly endless! Because the Model 1600 cuts so smoothly, sanding is virtually unnecessary!

BUILT TO LAST!

The sturdy new Woodmaster Model 1600 gives you all the features found in more expensive machines including a big, 16-in. throat capacity, 2-in. cutting depth, a generous, oversize worktable, ball-bearing drive . . . and much more!

FULL TILTING WORKTABLE!

Unlike any other scroll saw, the Woodmaster's table tilts and locks in any position up to 45° right or left. This means you can produce work on the Model 1600 impossible to duplicate on any other parallel or C-arm scroll saw! Can be ordered complete with motor, stand and dust blower. Easy Terms.

30-DAY FREE TRIAL!

Send For Complete Facts! See how you can use the Woodmaster Model 1600 in your own shop for one full month completely without risk! MAIL COUPON TODAY or:

Call Toll-Free
1(800) 824-7888 Oper. 642

Woodmaster Power Tools, Inc.
Dept. CW7
2908 Oak, Kansas City, MO 64108

INFORMATION KIT . . . FREE!

SCROLL SAW FACTS

No Obligation . . .
No Salesman Will Call

Woodmaster Power Tools
Dept. CW7
2908 Oak
Kansas City, MO 64108

☐ **YES!** Please rush me, free and without obligation, your Complete information Kit on the new MODEL 1600 SCROLL SAW plus facts on Woodmaster's 30-Day FREE TRIAL Money-Back Guarantee!

Name _____

Address _____

City _____

State _____ Zip _____

PRODUCTS THAT PERFORM

Carbide-tipped hole saws

Need a dozen solid oak wheels for a toy project? With Enduro Hole Saws you can whip them out in a jiffy. We used the carbide-tipped wood saw to cut through ¾" oak effortlessly with only minor chipping. Available in diameters from 1" to 2½", this pair takes on wood or metal. The wood saw can cut a full 1¾" deep in a single pass through lumber. Chips are channeled out to prevent clogging and drill burnout, and you remove the sawed-out core by taking off the saw tube. Both wood and metal saws, packed together, share the same mandrel, which must be purchased separately. *Enduro Hole Saws. At retail stores, for $4.70 to $7.10, depending on size. Mandrel, about $7. Credo Cutting Tool Division, Omark Industries, 2765 National Way, Woodburn, OR 97071.*

Pocket moisture meter

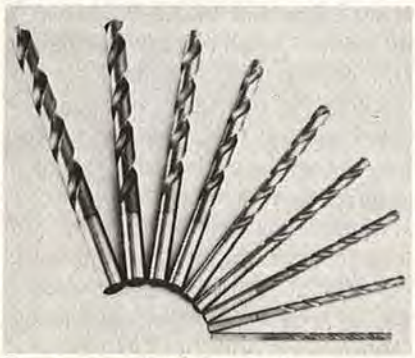
Whether you dry your own wood or just want to know the moisture content of a board, Mini-Ligno tells you in a hurry. Probing pins pushed into the wood indicate moisture content between 6% and 20% by LED readout. A position switch allows you to compensate for differing densities of wood. Operating on two 9-volt batteries, this 5½"×2¾"×1" pocket-size meter features rugged, high-impact plastic construction. Use it for readings in lumber, veneer, fiberboards, hardboards, and many other materials. *Mini-Ligno Moisture Meter. $110, from Lignomat USA Ltd., Dept. W, P.O. Box 30145, Portland, OR 97230.*

Heavy-duty shop apron

Designed for protection as well as convenience, this full-length shop apron features a split-leg cut that's comfortable to wear sitting or standing. You can strap the split apron to each leg to avoid flapping. Long-wearing, 8-ounce green duck saves clothes and guards against splinters, chips, spills, and sharp objects. Waist-high pockets hold your hand tools at bench level, and pencils stay put in a small bib pocket of their own. The apron comes in a standard, one-size-fits-all length of 36". *Full-Length Apron. $15.90, available from Woodworker's Supply of New Mexico, Dept. W, 5604 Alameda, NE, Albuquerque, NM 87113.*

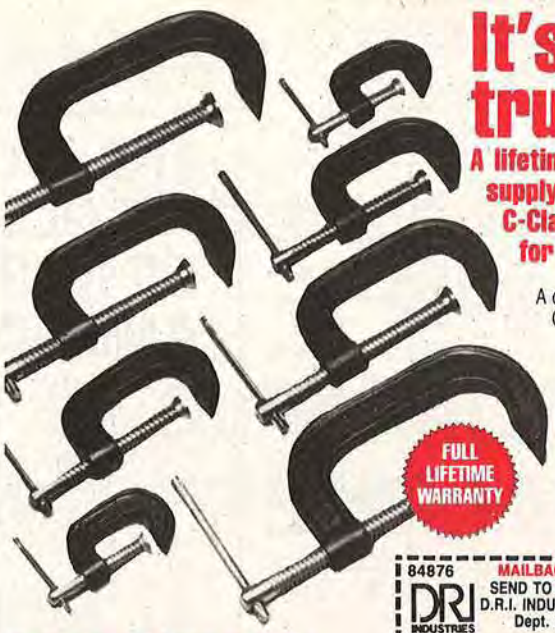
PEG: a dream come true

Until the discovery of polyethylene glycol 1000 (PEG) in the mid-1950s, it was nearly impossible to turn green wood, crotch wood, and many challenging pieces without fear of splitting and checking. Now, you can rough a piece out on the lathe, soak the wood about two weeks in a mixture of PEG and water, and then dry for six to eight weeks. The piece then can be returned to the lathe, completed, and sealed with your favorite finish. *PEG. Available through various mail-order catalogs. We ordered a 10-pound block for $17.00 postpaid from General Finishes, P.O. Box 14363, Dept. W, Milwaukee, WI 53214.*



Space-age bits keep their point

We used and abused these drill bits and they just kept asking for more. A titanium-nitride coating has been applied to high-speed steel to reduce heat build-up and speed removal of chips. What this means to you is drill bits should stay sharper longer. The bits are recommended for wood, plastics, steel, aluminum, and cast iron. *Titanium-Nitride Drill Bit Set. Available in nine-piece sets (⅛" to ⅜") for $36.85 postpaid through Sears tools catalog. Refer to stock no. 9 GT 6824.* ■



MAILBAG BUSTER SPECIAL OFFER
Prices Guaranteed Until August 31, 1985.

It's true! A lifetime supply of C-Clamps for only $9.99

Limit 3 sets at this low price

A complete 8-piece set of industrial-quality C-Clamps...A clamp for every job...gluing... sawing...drilling...welding ...planing...any kind of holding job.

Truly heavy-duty. With cast-iron "I" frame... precision tooled, copper-plated steel screw... copper-plated, swivel pad...copper-plated, sliding tommy bar.....large, cast-iron anvil.

Complete size range. Includes 2 each of the most popular sizes...1", 2", 3" & 4".

FULL LIFETIME WARRANTY

FREE CATALOG!

With your order we'll send you our latest catalog...filled with over 1500 fasteners, tools and organizers. You'll discover why 3 million people have made D.R.I. the Hardware Store In Their Mailbox.

100% Guarantee Of Satisfaction
...if not totally satisfied, return your order for a complete refund.

FULL LIFETIME WARRANTY
...with product or write for advance free copy to: D.R.I. Industries, Inc., Dept. 84876, 11300 Hampshire Ave. So., Bloomington, MN 55438-2498

84876 MAILBAG BUSTER SPECIAL OFFER COUPON MAG-124

DRI INDUSTRIES (00017550)

SEND TO AND MAKE REMITTANCE PAYABLE TO:
D.R.I. INDUSTRIES, INC., 11300 Hampshire Ave. So., Dept. 84876, Bloomington, MN 55438-2498

Ship me_____8-pc. sets of C-Clamps @ $9.99= $ _____

Add shipping & handling. $1.50 for one set.= $ _____
$2.00 for 2 sets. $2.50 for 3 sets.

Prices Guaranteed Until August 31, 1985.

PAY THIS AMOUNT—TOTAL = $ _____
(MN residents add 6% sales tax)

CHECK METHOD OF PAYMENT
☐ Check or money order
☐ Charge it to: (check one) ☐ VISA ☐ MasterCard ☐ American Express ☐ Diners Club ☐ Carte Blanche

Card No. _____ Exp. Date ___/___

Signature X _____
(Need sign only if charging order.)

Name _____

Address _____

Street & No.

City _____ State _____ Zip _____

☐ I don't wish to order now. But please send me your catalog. I've enclosed $1 (refundable with first order). (00005830)

IF YOU THINK YOU CAN CUT CORNERS WITH AN OLD BLADE, PUT IT TO THE TEST.

Because your work demands tools of exacting and delicate precision, we make X-ACTO® knife blades both sharp and precise. But because our blades can't keep their accuracy forever, we also make them easily replaceable.

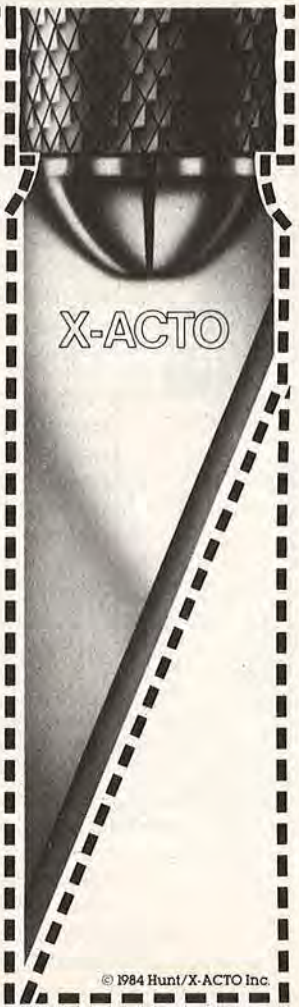
THE X-ACTO TEST

A sharp X-ACTO blade will maneuver smoothly along the curves and corners of this dotted line, making the kind of clean cut you expect in your work. If, however, your blade drags, shreds, slips or catches somewhere along the line, then it's no longer giving you the precision your work demands. In which case, it's time to replace your X-Acto blade with a fresh one.

When used properly, your X-Acto knife will become indispensible. But when used frequently, remember that the blade is disposable.

X-ACTO® BRAND CRAFT KNIFE BLADES

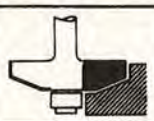
Put new life in your X-ACTO knife.



© 1984 Hunt/X-ACTO Inc.

*SPECIAL SUMMER $2.00 OFF SALE — SEE BELOW
CARBIDE TIPPED ROUTER BITS · PROFESSIONAL PRODUCTION QUALITY
SPECIAL OFFER — SAVE 50%-75% BELOW COST

1000's SOLD TO READERS OF FINE WOODWORKING

BEST CUT BEST PRICE	ITEM NO.	DESCRIPTION	RADIUS	LARGE DIAM.	CUTTING LENGTH	PRICE
		COVE				
	#01	1/4" R	1/4"	1"	1/2"	$13.00
	#02	3/8" R	3/8"	1¼"	9/16"	14.00
	#03	1/2" R	1/2"	1½"	5/8"	15.00
		ROUND OVER				
	#04	1/4" R	1/4"	1"	1/2"	15.00
	#05	3/8" R	3/8"	1¼"	5/8"	16.00
	#06	1/2" R	1/2"	1½"	3/4"	19.00
		ROMAN OGEE				
	#07	5/32" R	5/32"	1¼"	15/32"	18.00
	#08	1/4" R	1/4"	1½"	3/4"	20.00
	#11	3/8" RABBETING	Deep 3/8"	1¼"	1/2"	14.00
	#09	1/8" (KERF) SLOT CUTTER		1¼"	1/8"	14.00
	#10	1/4" (KERF) SLOT CUTTER		1¼"	1/4"	14.00
	#12	45° CHAMFER	45° Angle	1½"	5/8"	15.00
	#15	RAISED PANEL	20° Angle	1-5/8"	1/2"	25.00
		DOVETAIL BITS				
	#16	3/8" DOVETAIL 9°		3/8"	3/8"	7.50
	#17	1/2" DOVETAIL 14°		1/2"	1/2"	8.50
	#18	3/4" DOVETAIL 14°		3/4"	7/8"	10.50
		CORE BOX (ROUND NOSE)				
	#19	3/8" CORE BOX	3/16"	3/8"	3/8"	11.00
	#20	1/2" CORE BOX	1/4"	1/2"	11/32"	14.00
	#21	3/4" CORE BOX	3/8"	3/4"	5/8"	18.00
		GROOVE FORMING OGEE				
	#22	1/2" GROOVING OGEE		1/2"	3/8"	16.50
	#23	3/4" GROOVING OGEE		3/4"	7/16"	21.00
	#24	1/4" Straight Bit		1/4"	1"	7.00
	#25	5/16" Straight Bit		5/16"	1"	7.00
	#26	3/8" Straight Bit		3/8"	1"	7.00
	#27	1/2" Straight Bit		1/2"	1"	7.00
	#28	3/4" Straight Bit		3/4"	1"	10.50
Flush Trim / Key Hole	#13	1/2" FLUSH TRIM		1/2"	1"	8.50
	#14	3/8" KEY HOLE (This Bit only HSS)	CUTS 3/8" KEY HOLE FOR FLUSH MOUNTING PICTURE FRAMES, ETC.			8.50

WHEN ORDERING ANY 3 OR MORE, DEDUCT $2.00 EACH
ALL PRICES POSTAGE PAID *OFFER EXPIRES 8-25-85

- Professional Production Quality
- 1/2" Ball Bearing Pilot
- 1/4" Diameter Shanks x 1¼" Long
- One Piece Construction
- Two Flute Thick High Quality Tungsten Carbide Tips

To order by Master Charge or Visa Toll Free
7 Day — 24 Hour Order Service Call
1-800-523-2445 Ext. 56 (in PA 1-800-346-7511 Ext. 56)
or send check to: **MLCS, Wood, Box 53D, Rydal, PA 19046**

ASSOCIATIONS YOU SHOULD KNOW ABOUT

THE WOODWORKING ASSOCIATION OF NORTH AMERICA

Print this article

Everyone's getting into the sawdust! Not since the Fifties, say industry observers, has there been such an interest in woodworking. No wonder, then, that membership in the Woodworking Association of North America (WANA) has spurted from zero to over 2,000 in less than two years.

Formed in 1983, WANA aims to provide its members from the U.S. and Canada with information about woodworking and to advance woodworking as a hobby and industry. WANA sponsors shows, hosts hands-on seminars, and directly involves the industry and its leaders in the concerns of woodworkers.

Executive Director Peter F. Engel has assembled some of the foremost names in woodworking to help direct the Association: Glen Docherty of Constantine's, Jim Forrest of Forrest Manufacturing, Bob Schwartz of The Cutting Edge, and Wally (Mr. Sawdust) Kunkel, to name a few. Master craftsman Allen Fitchett serves as WANA's technical consultant.

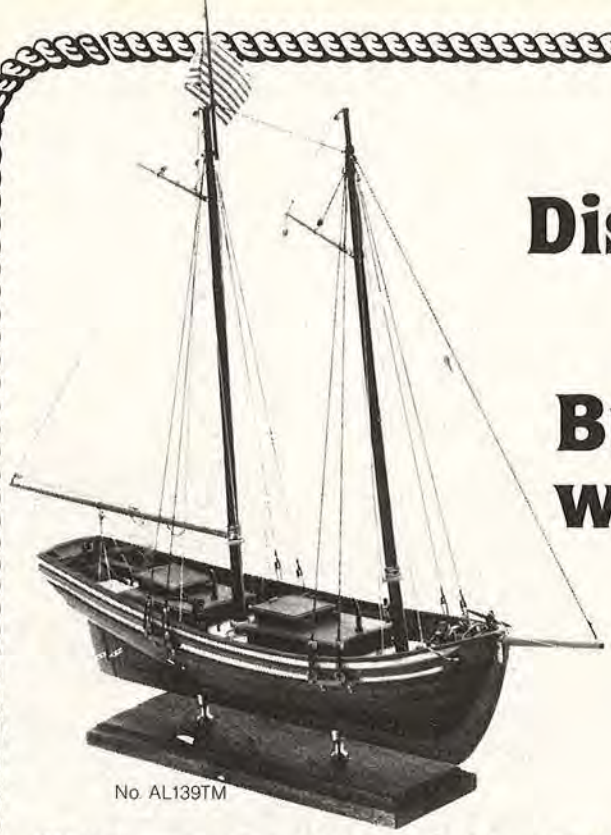
WANA members receive the quarterly magazine *International Woodworking* and free classified advertising privileges; half-off admission price to WANA-sponsored shows and other events; special discounts from suppliers and manufacturers; and answers to woodworking questions through the membership and corporate sponsor network. WANA soon will offer group health insurance, as well as more woodworking shows and seminars. Shows are now held in Springfield, Mass.; Washington, D.C.; Toronto; Houston; Philadelphia; and Chicago.

This year, the first hands-on seminars took place in Chicago and Toronto. Covering such topics as tablesaw technique, marquetry, chip carving, and dovetail joinery, these seminars required a full day of workshop participation. Registration fees ranged from $75 to $90 for members ($150 to $180 for non-members). For those who are unable to attend workshops, or simply want to learn at their own pace, the Association hopes to offer a videotape rental program.

Annual membership is $15 ($20 Canadian). For more information and membership application, write *The Woodworking Association of North America, 35 Main St., Suite 6, Plymouth, NH 03264.* ■

Discover the world's oldest hobby!

Build this beautiful wooden ship model.



No. AL139TM

Special offer for those who have never built a ship before!

Wouldn't you love to build this historic ship model? It's a true-to-scale, 21" replica of the 2-masted schooner *Swift*, a Virginia pilot boat of 1805. Well, now you can! And you don't have to be a skilled craftsman to do so.

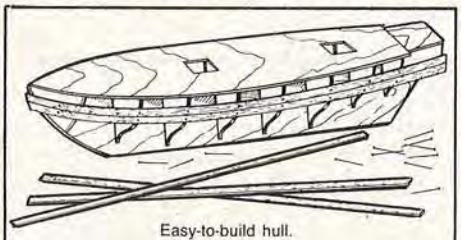
It really isn't hard

Even if you've never built a model before, you can experience the relaxing pleasure and pride of accomplishment that is offered by this fascinating hobby. You can build the *Swift*. The secret's in our kit, designed especially for the first time modeler, with pre-cut parts that make assembly easy. Clear, large scale plans and instructions that virtually take you by the hand and guide you every step of the way through hours of the most relaxing fun you'll ever have. And when completed—a museum quality model you'll display with pride, with gleaming brass fittings, walnut planked hull, delicate rigging—lifelike in every detail.

Quality you can see and feel

The materials in our kit may be better than those used in the original *Swift*. The keel section and frames are pre-cut plywood, ready for quick assembly. The *Swift*'s hull is planked twice; once with thick, flexible limewood for strength, then overlaid with planks of African walnut for lasting beauty.

You won't have to make the fittings—we've done that for you. Our kit contains ready-to-use blocks and deadeyes of rare, yellow boxwood. We include eyelets, bracers and belaying pins—over 70 parts of solid brass! Even the cabin door hinges are brass, as are the 250 miniature nails you'll use to fasten the planking to the hull and deck. And, since the original wooden *Swift* had no plastic parts, our kit doesn't either—*anywhere!*



Easy-to-build hull.

Everything you need to build...included.

Creative? And how! Overwhelming? Not a bit! But be prepared for hours of the most challenging, engrossing, relaxing fun you've ever had.

An "everything you'll need" special offer, with free tools and handbook.

We want to introduce you to this great hobby, *now!* So we've made it easy for you to get started. Our special offer includes the *Swift* kit plus all the tools you'll need to build her: pliers, hammer, knife, file, tweezers, sandpaper, glue, wood oil, and more. You'll also receive a free copy of "Ship Models from Kits," a 110 page beginner's guide. You don't have to buy anything else. The tools normally cost $17; the book retails for $7.95. But they're yours, FREE when you buy the *Swift* kit at its regular price of $39.95 (plus $4.00 for delivery).

Credit card holders order toll-free

Call **800-228-2028,** ext. **68,** 24 hours a day. In Nebraska, call 800-642-8300. Or use coupon below to send check or money order. **Order Kit No. AL139TM.**

Miniature Cannon Kit Bonus!

Set of two solid brass cannon on walnut carriages to be mounted amidship. $4.00 value, sent FREE with your order.

model expo, inc.
23 Just Road, Fairfield, N.J. 07007

MODEL EXPO, INC. 23 Just Road, Fairfield, NJ 07007 Dept. BHW-75

Please send me ___ kits of the *Swift* at $39.95 plus FREE tools, book and cannons. Check or money order enclosed. (Add $4.00 for delivery. NJ residents must add 6% sales tax.)

Name_____

Address_____

City_____ State_____ Zip_____

If less than delighted, you may return your purchase within 30 days for a full refund.

116 page full color hobby catalog sent FREE with your order.

© Model Expo, Inc. 1985

The INCA Woodworking Machinery Handbook

with useful tips and jigs for everyone!

Recommended for all power tool woodworkers. The joinery book for all present or prospective INCA owners. Now, at a Special Price! List - $12.95 **Special $9.95 ppd. *A $3.00 Savings!***

Many ideas for jigs, including Dovetails, Finger Joints, Pattern Work and many more are shown in over 300 illustrations. For your Table Saw, Bandsaw, Jointer, Planer & Shaper.

Drawer Dovetails Cut on Table Saw

Copying Curves Using Bandsaw

Return in 30 days for refund if not satisfied.

Send me the INCA Machinery Handbook at $9.95 each.
( ) Check Enclosed ( ) Charge to my: VISA, M/C, Amex
Card #: _____ Expires: _____
Signature: _____
Name: _____
Address: _____
City: _____ State: _____ Zip: _____

Send to: **The Garrett Wade Co., Inc., Dept.509**
161 Avenue of the Americas, NY,NY 10013
Offer Expires 9/1/85

MAKITA • PORTER CABLE • ROCKWELL • BOSCH • LION

HILLER HARDWARE CO.

ASSURES YOUR SATISFACTION ON ANY ITEM PURCHASED FROM US! WE CAN SHIP YOUR BANK CARD ORDER TODAY

DELTA SPECIALS

	Model	Price
10 in Tilting Arbor Saw	34-429	899.00
10 in Unisaw 3 H.P.	34-763	1599.00
H.D. Wood Shaper	43-371	1879.00
8 in Joiner Long Bed	37-315	1399.00
New 18 in Scroll Saw	40-601	949.00
Sawbuck	33-150	525.00
Unifeeder	34-150	449.00
13 in Planer RC-33	22-651	1299.00
14 in Band Saw Complete	28-283	699.00
6 in x 48 in Sander Complete	31-730	1239.00
1 H.P. Dust Collector	50-180	365.00
15 in Drill Press	15-091	369.00

25% OFF DELTA CARBIDE SHAPER CUTTERS

- WE HONOR ALL FREUD NATIONALLY ADVERTISED SPECIALS
- CALL OR WRITE TODAY FOR CURRENT PRICES ON OTHER TOOLS/ACCESSORIES
- VISA, MASTERCARD ACCEPTED

HILLER HARDWARE CO.

1411 ASSEMBLY STREET, P.O. BOX 1762
COLUMBIA, S.C 29202-1762
803-779-3131 EXT. 12

YOUR WOODWORKING SPECIALIST IN THE SOUTHEAST

MARPLES • RECORD • WATCO • NU-LIFE • DOWEL-IT-CLESCO • GILLESPIE • FREUD

BLACK & DECKER • MILWAUKEE • FORSTNER • JORGENSEN • 3M • W.L. FULLER

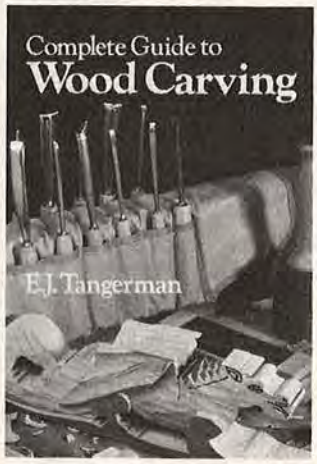
HEGNER • STANLEY • GREENLEE • HENCKELS • MERIT

BOOKS WORTH READING

Print this article

Complete Guide to Wood Carving

By E. J. Tangerman. Sterling Publishing Co., Inc., Two Park Avenue, New York, NY 10016. ©1984.



352 pages
$12.95
Paperback

Full of drawings and photos—684 in all—this superb guide covers all facets of wood carving. Tangerman, a carver for more than 50 years, liberally seasons his instructions with personal observations and amusing, pointed anecdotes. He writes in a friendly manner, so his advice to everyone from rank beginner to veteran carver sounds as if it comes from a friend.

In an easy-to-read style, Tangerman writes about sharpening tools, selecting the "right" size for a carving, choosing wood, and finishes to use. He also tells you how to carve a wide range of subjects—animals, flowers, fabled unicorns and dragons, buildings, people's faces and heads, and lettering. How to carve different materials such as ivory, bone, stone, seashells, and nuts, is another topic.

The author's knowledge of carving around the world shines through in insights such as this one about carving the human figure: "Scandinavian carvers have for many years produced angular, blocky figures that are very well done. They are almost formulaic: three creases at elbow and knee, saggy breeches, wrinkled coats, and slightly battered hats. African carvers produced lampoons of the white men and women who bought them, as do modern Haitian ones."

Just for fun, read this book. Who knows? It may light your fire as a whittler.

"The most important cut for the knife is exactly that used by someone peeling a potato: the knife caught in the curve of the four fingers, the thumb on the work, and the cut made by closing the hand. That gives the greatest control because it is finger rather than arm muscle that does the work."

Patented Transitional and Metallic Planes in America, 1827–1927

By Roger K. Smith, The North Village Publishing Co., Lancaster, MA 01523. ©1981.

336 pages
$58.00
Clothbound

Our initial reaction to this book was: "Why on earth would anyone undertake writing a book on old planes and who will read it?" After leafing through Smith's book, though, we soon understood their fascination. Like thousands of collectors, we're hooked.

The author focuses on planes made and sold in the century between 1827 and 1927, which Smith reports account for only about a third of the 600 planes that have been patented in the U.S. (It seems better mousetraps and widgets aren't the only things inventors strive for . . .)

While researching this admittedly narrow field, the author gleaned details from old business directories, patent specifications and drawings, catalogs, trade magazines, and other sources. His chapters examine the first American metallic planes, the search for an efficient means of holding and adjusting the cutter, and specific designs and their manufacturers.

Beautifully illustrated with 41 full-color and dozens of black-and-white photographs, the book also includes nostalgic reproductions of early advertising. Many tools shown are works of hand-tooled art; others are strange curiosities.

Roger Smith has been smitten with planes and all the woodworking Americana they embody. Read this book and we suspect that you will be, too.

"Perhaps the epilogue for this entire volume is the fact that out of scores of manufacturers discussed, Stanley was the lone survivor and continues to be the only manufacturer of hand planes in America."

NEW! *Woodmaster* Variable Speed Power-Feed

PLANER/MOLDER
JOINTER/SANDER

SAVES YOU MONEY! Put this versatile power-feed tool to work in your own shop. See how fast it **pays for itself!** Quickly converts low-cost rough lumber into valuable finished stock. Turns out perfect quarter-round, casing, base mold, tongue & groove . . . all popular patterns . . . any custom design. Joints super-true edges, squared stock, bevels and chamfers.

MAKES YOU MONEY! Now you can start your own high-profit business selling all types of millwork to lumberyards, carpenters, contractors, picture framers, do-it-yourselfers. Use it to make grandfather clocks, gun cabinets, furniture, toys, planters, porch swings, benches, paneling, flooring. In fact, this one power-feed tool opens up a truly astonishing range of products you can make and sell.

Jointer lets you move back to planing without changeover.

Produces tongue & groove with one set-up, two boards in same pass.

Tumsouthigh-value, satin-smooth custom moldings plusall popularpatterns.

Optional sanding head converts planer to power-feed drum sander!

New Sanding Attachment
Quickly converts machine to one of the finest drum sanders available. Consistent power feed eliminates "low spots" and irregularities caused by hand sanding method.

Revolutionary Quick-Change Molding Head!
Exclusive patented design lets you mold up to six patterns in a single pass! Eliminates time-consuming set-ups. Uses low-cost cutterbits. Makes it easy to produce patterns impossible to duplicate on any other planer.

FREE INFORMATION KIT

WOODMASTER TOOLS, INC., DEPT. PW7
2908 OAK • KANSAS CITY, MO 64108
Or Phone 1-800-824-7888 Oper. 642

☐ **YES!** Please rush me your FREE Information Kit plus details on your 30-DAY FREE TRIAL GUARANTEE!

NAME _____
ADDRESS _____
CITY _____
STATE _____ ZIP _____

DO-IT-YOURSELF KITS

BUILD YOUR OWN GRANDFATHER CLOCK

Prices Starting Under **$280**
(including movement and dial)

- Do-it-yourself case kit, parts pre-cut
- Finished clocks
- Solid 3/4" hardwoods: black walnut, cherry, oak
- Heirloom quality
- Factory direct prices
- Solid brass West German chiming movements
- Money back guarantee
- Prompt shipment
- No woodworking experience necessary

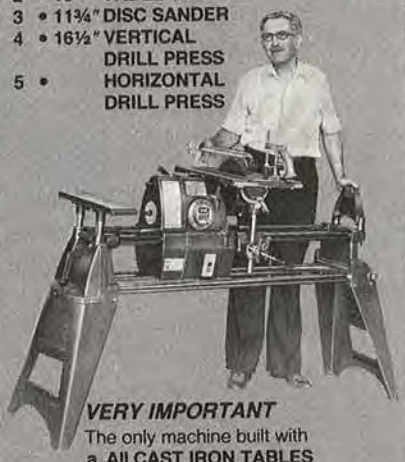
WRITE FOR FREE COLOR CATALOG

EMPEROR® CLOCK COMPANY
WORLD'S LARGEST MANUFACTURER OF GRANDFATHER CLOCKS
Dept. 1621, Emperor Industrial Park
Fairhope Alabama 36532 · Phone 1-205-928-2316
I am interested in ☐ Do-It-Yourself Kits ☐ Finished Clocks

Name _____
Street _____
City _____
State _____ Zip _____
(please print)

WOODWORKING MACHINES
5 in 1 Combination

1 • 34" LATHE
2 • 10" TABLE SAW
3 • 11¾" DISC SANDER
4 • 16½" VERTICAL DRILL PRESS
5 • HORIZONTAL DRILL PRESS



VERY IMPORTANT
The only machine built with
a. All CAST IRON TABLES
b. HEAVY-DUTY DESIGN
c. 1½HP MOTOR DEVELOPS 3HP
d. BUILT AS AN INDUSTRIAL MACHINE
e. ONLY MACHINE WITH 5-YEAR GUARANTEE

ONE PLACE FOR ALL YOUR NEEDS...

☐ VISA ☐ MASTERCARD ☐ FINANCE AVAILABLE

PLANT:
MASTER WOODCRAFT CO.
800 SPRUCE LAKE DRIVE · P.O. BOX 669
HARBOR CITY, CA 90710
TOLL FREE 1-800 421-2467
IN CALIFORNIA CALL COLLECT (213) 549-0761
(A Republic-Lagun Group) · Dealership Available

User Friendly

OIL BASED · WATER CLEAN-UP
DRIES IN 2 HOURS · NON-FLAMMABLE
NO HARSH ODOR

Deft, Inc., Irvine, CA 92714 · Alliance, OH 44601

Quality By Design
PORTER·CABLE
PROFESSIONAL POWER TOOLS

MODEL 100
7/8 HP ROUTER
SPECIAL **$99.95**

MODEL 7548
Electronic Variable Speed/Variable Orbit Heavy Duty
BAYONET SAW
SPECIAL **$135.99**

MODEL 337
3" x 21" BELT SANDER
With Dust Pick-Up
SPECIAL **$141.99**

Supplies Limited - N.Y.S. Residents Add Sales Tax

BRADY SUPPLY CORP.
649 Madison Avenue
P.O. Box 326
Elmira, NY 14902-0326
607-733-6591

Get Into The Woods With Us
EDLCO

School Shop Suppliers For 33 Years

Now Serving Craftsmen • Cabinet Makers

Top Grade Hardwoods

Appalachian & Imported
Softwoods • Veneers
Turnings
All Kiln Dried

Catalogue $2.00
Write Today

EDLCO
P.O. Box 5373 W
Asheville, N.C. 28813

Call
(704) 255-8765

EDUCATIONAL LUMBER CO., INC.

WOODWORKERS

SPECIAL!!!
2 Year Subscription
8 BIG ISSUES
ONLY $4.00

ORDER NOW AND GET
FREE $5.00 GIFT CERTIFICATE!!
Thousands of woodworking Items at super sales prices!

R. A. NESS & CO.
THE WOODWORKERS EMPORIUM
8888 N. MILWAUKEE AVE.,
NILES, IL 60648
(312) 824-0565

REDWOOD
nature's fogbound giant

"Where the fog flows, the redwood grows," a line from a popular West Coast logging country folk song, definitely applies to the coastal, or California, redwood.

The giant of all nature's plants, the coastal redwood *(Sequoia sempervirens)* towers to heights of nearly 400 feet within a narrow 500-mile stretch of coastline from southern Oregon to California's Big Sur. This mountainous habitat feeds necessary moisture to its redwoods through frequent rains and blankets of fog.

While the redwood soars in stature, it's not lacking in girth. A specimen logged in 1914 measured 26' in diameter at 7' above the ground and yielded 344,000 board feet of lumber!

Capable of living 2,000 years or more, this conifer ranks among nature's eldest statesmen as well.

Clear all-heart vertical grain

Clear flat grain with sapwood

Coastal redwood

Wood identification

While there are two redwood species, coastal and sierra, only the quick-sprouting, fast-growing coastal variety is commercially harvested.

Redwood has a warm, reddish-brown color when sawn from the heart of the tree. Boards with sapwood have contrasting cream-colored accents. Left to weather, all redwood eventually turns gray.

The redwood lumber industry labels the available grain features as either *flat* (which actually looks wavy) when wood is cut at an angle to growth rings, or *vertical* (which appears straight) sawn across the rings.

Redwood grading standards include these better-quality categories:

- *Clear all-heart*, contains all heartwood with only minor surface defects;
- *Clear*, the same quality but with sapwood;
- *B grade*, mixes heart, sapwood, with knots.

Veneers, in burl figure, are extremely costly and normally for architectural purposes only.

Working properties

Seasoned redwood, especially when it has been kiln-dried, remains stable even in high humidity. It is comparatively strong while light in weight, and its lack of pitch or natural resins makes it highly fire resistant. Perhaps redwood's biggest asset is the organic compounds in its heartwood that retard decay and insect attack.

The wood works easily with both hand and power tools and sands and finishes extremely well.

While it does have structural strength, redwood tends to split easily, so drill pilot holes when screwing or nailing near the ends. Nuts and bolts are often used to assemble redwood projects, since the soft wood easily tears. It does glue well, though.

Uses in woodworking

It belongs anywhere outdoors—in patio furniture, fences, decks, and siding. Heartwood can even be used in water containers, such as vats and hot tubs.

Because it doesn't absorb odor and has none of its own, redwood often is chosen for barbecue carts and picnic tables.

Cost and availability

Redwood's best grades may approach the board foot cost of walnut, except nearer the West Coast supply. All heartwood, even in lesser grades, will be priced higher than lumber including sapwood.

Unlike hardwoods, redwood lumber comes in nominal sizes, such as 2×4, 1×6, etc., and in lengths up to 20 feet.

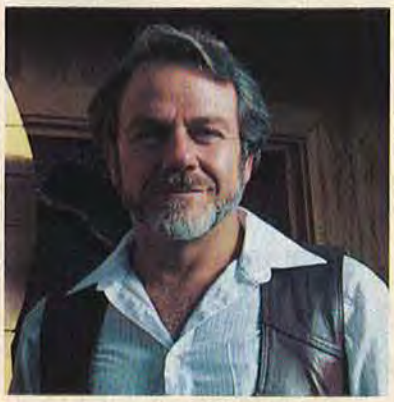
Sources of supply

In its California/Oregon coastal habitat, commercial redwood usually is harvested in the upper elevations, which account for only 10 percent of the total growth area. The remaining redwood groves are protected. ■

Illustration: Steve Schindler

Print this article

BAND SAW



Richard Rothbard followed a winding road to his woodworking career. And at each turn he acquired valuable experience that later helped him succeed. In his hometown of New York City, Richard admits to not having been very good in high school woodworking class. At college, he focused on finance, but preferred campus theatrical productions. After graduation, the stage led him to Broadway, where he achieved recognition for his singing, and acting.

Woodworking, though, was to capture his lasting attention—first as a partner in a custom furniture shop and gallery, then as an independent craftsman. Today, Richard is based at Sugar Loaf, N.Y., a rural crafts village cuddled by the hills within commuting distance of the Big Apple. From his Beautiful Woods shop, Richard, 45, distributes his products across the nation. His wife, Joanna, shares his boundless enthusiasm for wood.

Its shape suggests a huge Monterey pine or perhaps an ancient oak. Whichever it was intended to be seems of little concern to potential buyers who admire the zebrawood piece Richard Rothbard has designed. Even from a distance, the craftsmanship is apparent—fine, intricate saw kerfs divide and define its branches while the wood glows with a satin sheen. Like a sculpture, the tree fascinates from every angle.

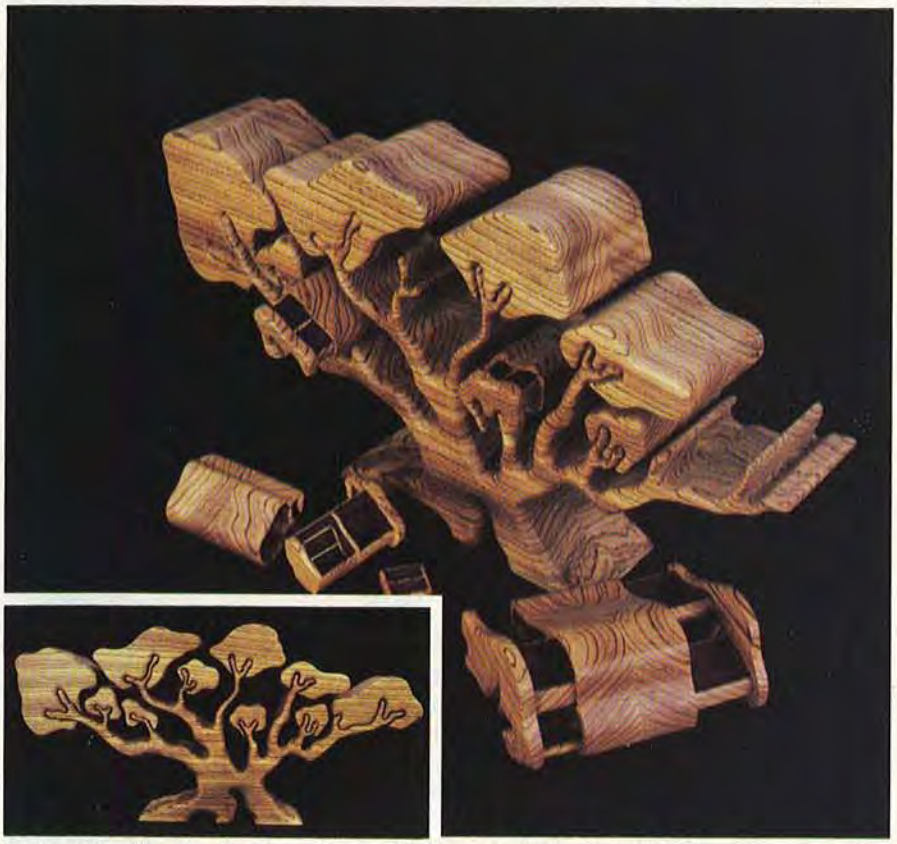
There's more, however, to this tree than first meets the eye. A touch from Richard nudges a tiny drawer into view. Then another. And another. The intriguing tree camouflages dozens of tiny drawers and compartments within its branches.

The customers in his shop giggle, then stare and stammer as the tree comes apart before them. Richard laughs and explains their reaction.

"We call this and our other intricate ones 'Oh! Oh! Oh!' boxes, because when they're opened, that's exactly what people say.

"Next, they ask how it was done—how did I cut into the wood to make the compartments? I tell them 'with a band saw,' but they still want to know more because they don't grasp the technique. So I tell them 'We have a home study course—buy one, take it home, and study it!' "

This banter with customers, coupled with the uniqueness of the intricately sawn "surprise" boxes and a businesslike approach to market-



Richard Rothbard calls this zebrawood tree an "Oh! Oh! Oh!" box because of its surprising number of compartments. The most expensive in his line, it retails for $1,600.

BOXES

How Richard Rothbard succeeds with craftsmanship and selling savvy

ing, has made woodworking profitable for this ambitious and creative craftsman. He sums up his successful philosophy this way: "I believe that marketing is every bit as much of an art as woodworking."

Products that sell: woodworking's business aide

If you've ever dreamed of making a living from your woodworking, pay heed to Richard's advice: He's among the fortunate few who have managed to make their craft their livelihood.

According to Richard, fine craftsmanship alone won't guarantee anyone a living from woodworking. Making it in the marketplace requires the right product at the right price.

"If I had wanted to be a pure artist," Richard says, "I'd only have done what my artistic desire told me to do. I'd not have considered the marketplace. But then I would have had to settle for the relatively meager opportunities for selling that exist out there for artists."

That's not how Richard went about it. He had always found fascination in Chinese interlocking puzzles and boxes, the kind sold in import and souvenir stores. But he knew they were too time consuming to be profitable. He chose instead simple shapes and techniques and developed ways to turn them into puzzles.

Manzanita root, from California, offers spectacular color and fascinating twists. Band-sawing the wood into a jewelry box breaks many a blade, so it's not for amateurs.

"I wasn't really thinking in terms of mass production," Richard relates, "only of making a product that would retail in a price range that people would want and could afford. I played around in the woodshop until I realized I had some great items—my desktop zoo I called them. They were stamp dispensers, change holders, and letter organizers in animal shapes—all done with a band saw. After calculating the time for all the steps—from picking out the wood to final finishing—I suddenly discovered that I could produce them at a price where they could actually be wholesaled."

Desktop zoo puzzles pioneered the way. The fascinating boxes came next. "I designed around an image, tried to create a space inside it, then took a section of that image and worked it into a sliding or locking feature," Richard recalls. "But one thing leads to another, and I started getting involved with hidden compartments and drawers inside drawers. People liked the concept and they bought."

People still like Richard's work. His zebrawood pieces last year alone accounted for 5,000 board feet of 10/4 thickness stock. Demand for the rest of his "Beautiful Wood" line, which incorporates pieces fashioned from cocobolo, imbuya, walnut, cherry, aromatic red cedar, manzanita, mahogany, as well as zebrawood, keeps a handful of employees busy in the workshop, retail store, and shipping.

Techniques for marketing "Beautiful Wood"

Creating a niche in the crafts world, one that paid off, wasn't easy. But Richard knew what was needed to sell his product—and himself.

Richard believes that most craftspeople aren't salespeople because they reject what's involved with being commercial, such as sizing up a customer.

When someone stops by his booth at a major crafts fair, for instance, and inquires about his work, Richard wants to know immediately if they're sincerely interested in buying or simply want to hear him talk about his work. He introduces price right away, showing the lowest priced item, a high-priced

10 RICHARD ROTHBARD'S TIPS FOR SALES SUCCESS

1. *Make what the public will accept, in design and price.*
2. *Most people buy simpler things. Design them that way to keep the price down.*
3. *Find the cost of what you're making, then price accordingly.*
4. *The trick in succeeding with lower-priced items is to make them quickly.*
5. *Be sure you can reach your buyers. You can't make expensive furniture way out in the boonies unless you have a reputation.*
6. *Educate customers. If they don't understanding something, they won't feel comfortable buying it.*
7. *Learn to sell. You can't automatically reject what it takes to be commercial.*
8. *Don't be afraid to talk money right up front. It's realistic.*
9. *Work hard at presentation—new pieces, new slides, a sharp booth, nice-looking signs.*
10. *If you're not selling what you make, look around and see why not.*

Continued

one, and then one in between, commenting favorably about them all. That gives potential customers several comfortable buying niches. "If they don't feel comfortable," Richard emphasizes, "they won't spend."

Richard thinks it's also important to have something in a price range low enough to satisfy those who only have a few dollars to spare. "It gives you a great feeling to offer something that everyone can afford, something that those with little money can still buy and walk away happy. You're satisfying someone's need to have something of yours," Richard says.

The continually expanding Beautiful Wood line covers a broad price range. The top of the line is the multicompartmented zebrawood tree sculpture, with a $1,600 price tag. At the bottom end, at 50 cents, are animal-shaped trinkets no larger than a key ring fob, which he makes from thin scraps of exotic wood. In between are cigarette cases, jewelry boxes, pen and pencil cases, and puzzle boxes in myriad shapes retailing from just $12 to a substantial $400.

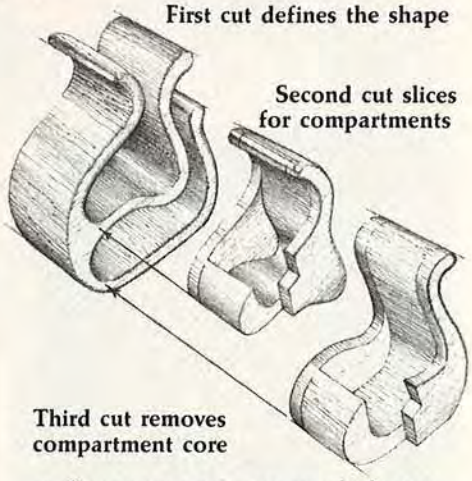
Wholesaling to gift shops and department stores in volume is a recent and successful expansion for Richard. To make it work, he developed a relatively expensive four-color, 12-page catalog displaying an assortment of his Beautiful Wood products.

Richard attributes part of the catalog's success to the story it tells about the nature and origin of the woods he uses. Educating the customer has to be part of the selling technique, he believes. This holds true whether you're talking to potential retail customers at a fair, in the store, or to long-distance buyers who order by phone.

"Few people really know anything about wood and what can be done with it," Richard says. "Even fewer can tell good work from less than good work.

"You have to tell customers that some woods—the cocobolo, imbuya, ebony, and zebrawood—are a commodity more like precious stones than soybeans. You have to point out that it's often rare, grows in exotic lands, and is expensive."

Made of solid black walnut, this onion-shaped jewelry box is one of Beautiful Wood's best sellers. Read about how it's made on the opposite page and see the sequence of band-saw cuts in the sketch below.



Looking to the future

Richard's success with his Beautiful Wood products sparked a desire for challenges. One is the staging and promotion of a series of crafts fairs. Under the banner "Craftmarket America," Richard showcases quality artists and craftspeople at shows open to both wholesale and retail customers. From New York and Massachusetts, Richard has expanded to major cities on both coasts.

Another deals with the village of Sugar Loaf. On the rolling, partially wooded acreage he owns across the road from his shop and retail store, Richard envisions a complete crafts complex. His plans include shops where craftspeople work, demonstrate, and sell their wares, as well as fine restaurants, an amphitheater for concerts, and country condominiums for those who want to live the rural life and commute the hour to work in New York City.

While Richard's energy is directed toward greater undertakings, he isn't

neglecting the band-saw products that make his other efforts possible. He wants to design even larger and more complex boxes and sculptures, and to add new shapes to the medium-priced range of his offerings. And, when all those dreams become reality, Richard plans to return to making custom furniture.

BAND SAW BOXES: THE TECHNIQUE

Richard's band saw boxes require practiced skill at the blade as well as careful advance planning for the series of cuts. If you were to inspect the finished onion box being created below, only the sharpest eye could detect the minute, practically invisible, glue lines that trace its manufacture. In such a shape, there's little opportunity to back out or use escape routes—the thin ⅛" blade driven by a powerful 5-hp. motor must sweep efficiently through the hardwood.

The unique onion-shaped jewelry box starts with the selection of a template from the dozens of stock patterns hanging on the shop wall. After laying the template atop an appropriately sized, precut piece of black walnut, Richard defines the cutting outline with flat black spray lacquer. This spray stenciling saves handwork and sharply outlines the band saw's path.

At the band saw, Richard skillfully guides the work into the blade, following the graceful lines which eventually trace the shape and the compartments within. Working from the inside of the piece outward, the blade cuts out the onion's core pieces—which will comprise the box's two main compartments.

The pieces have to be hollow, so Richard takes thin slices off the front and back, then makes a contour-following cut which removes the center of the stock. When the front and back slices are re-attached later, the hollow compartment will be ready to store items. If he chooses, additional smaller compartments are made by repeating this sequence with the leftover "centers."

Band-sawing completed, Richard now sands each piece (except gluing surfaces) on a special spindle-type sander he's devised that works perfectly on small rounded shapes. Spindles of different diameters covered with progressively finer sandpaper grits allow him to smooth even the tightest curves.

Yellow glue beaded on the joints, followed by a tight multiple-clamping, ensures that the box will stay together.

To finish the onion box, Richard sprays on a coat of oil-based urethane, lets it dry completely, then adds clear lacquer. The result is a rich, deep-looking finish that requires no maintenance. Inside, the box receives the ultimate touch—a velour-like, spray-applied flocking that pampers future contents. ■

Produced by Peter J. Stephano
Photographs: Jim Elder; Hopkins Associates

Selecting a template. **Dozens of shapes, covered with coats of black spray lacquer, represent variations.**

Band sawing the box. **A ⅛" blade follows the outline contours as the box is cut from the stock.**

Making the compartments. **Slicing off the core's front and back, then sawing out its center, creates a box.**

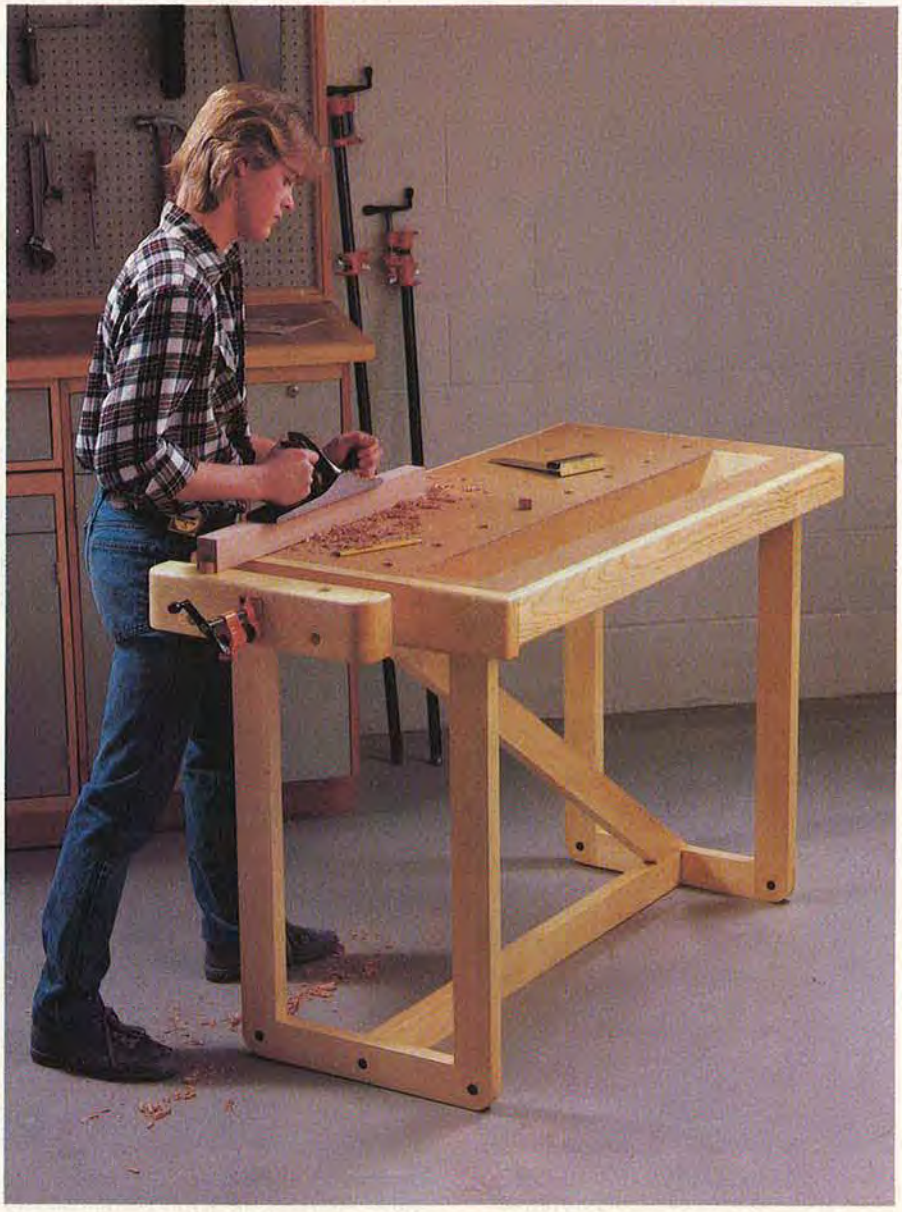
Contour-sanding. **Sandpaper-covered spindles of varying sizes were shop-built to conform to different shapes.**

Gluing and assembly. **With yellow glue, Richard readies a compartment for its front and back pieces.**

Unraveling the onion. **Relatively quick to make, the jewelry box features compartments within compartments.**

$50 and one weekend WORKBENCH

What more could a home woodworker want? This workbench is inexpensive (we spent less than $50 for materials), sturdy, and you can tackle it in just one weekend. It's equipped with an ingenious end vise, a tool tray, and lots of other conveniences that are guaranteed to please. Best of all, this little wonder is designed to *last* through years of pleasurable project-building.



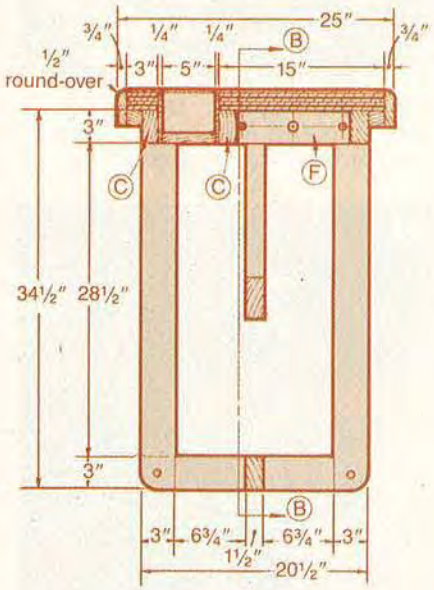
Building the base

1 Rip ¼" from each edge of all the 2×4 stock for a 3" finished width. (This removes factory-rounded edges and lets you make tighter-fitting, better-looking joints.) Crosscut the legs (A), end rails (B), and cross members (C, D) to size. Cut the strut (E) to size plus 2" in length and cut the vise bar guide (F) to size.

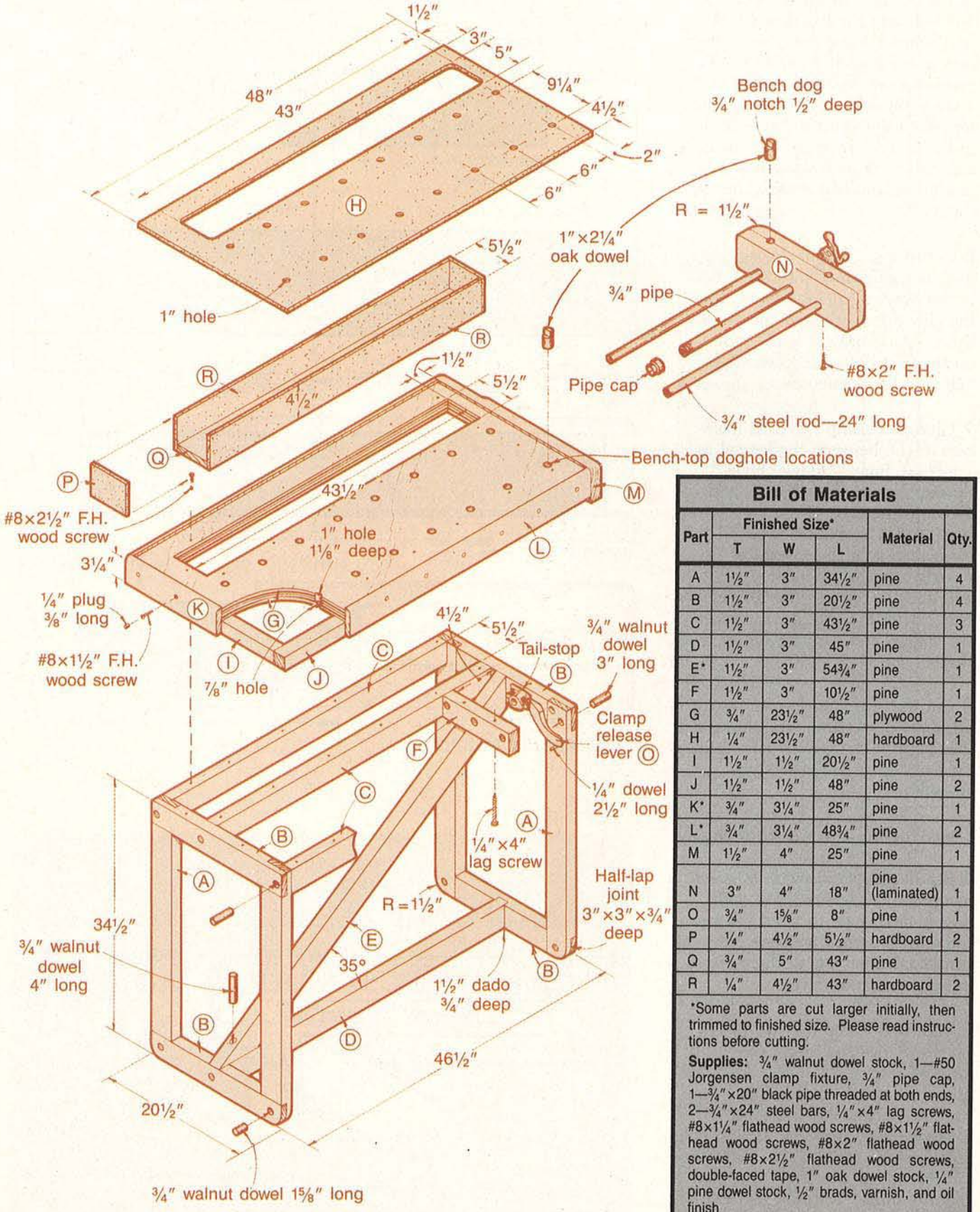
2 Measure and mark the half-lap joint locations on the ends of the legs and rails. Using a dado blade on a radial arm saw or table saw, test-cut half-lap joints on two pieces of scrap of the same thickness as the dimensioned pine stock. Check the fit and adjust the depth of cut if necessary. Clamp a stop to the saw fence to ensure an equal 3" half lap on all parts. Cut the joints on the ends of A and B.

3 At the same depth of cut used for the half-lap joints, cut a dado in the center of the bottom rails B to house cross member D.

4 Glue and clamp the leg/rail assemblies (A, B) together, checking for square with a framing square.



END SECTION



Bill of Materials

Part	Finished Size*			Material	Qty.
	T	W	L		
A	1½"	3"	34½"	pine	4
B	1½"	3"	20½"	pine	4
C	1½"	3"	43½"	pine	3
D	1½"	3"	45"	pine	1
E*	1½"	3"	54¾"	pine	1
F	1½"	3"	10½"	pine	1
G	¾"	23½"	48"	plywood	2
H	¼"	23½"	48"	hardboard	1
I	1½"	1½"	20½"	pine	1
J	1½"	1½"	48"	pine	2
K*	¾"	3¼"	25"	pine	1
L*	¾"	3¼"	48¾"	pine	2
M	1½"	4"	25"	pine	1
N	3"	4"	18"	pine (laminated)	1
O	¾"	1⅝"	8"	pine	1
P	¼"	4½"	5½"	hardboard	2
Q	¾"	5"	43"	pine	1
R	¼"	4½"	43"	hardboard	2

*Some parts are cut larger initially, then trimmed to finished size. Please read instructions before cutting.

Supplies: ¾" walnut dowel stock, 1—#50 Jorgensen clamp fixture, ¾" pipe cap, 1—¾"×20" black pipe threaded at both ends, 2—¾"×24" steel bars, ¼"×4" lag screws, #8×1¼" flathead wood screws, #8×1½" flathead wood screws, #8×2" flathead wood screws, #8×2½" flathead wood screws, double-faced tape, 1" oak dowel stock, ¼" pine dowel stock, ½" brads, varnish, and oil finish

Continued

5 Drill ¼" holes centered on each of the bottom half-lap joints only. You will drill the top dowel holes later when joining the cross members to the leg/rail assemblies. (To prevent splintering, we drilled with a spade bit until just the tip of the bit poked through the opposite side of the board. Then we turned the assembly over and, using the hole as a guide, finished drilling through the joint.)

6 Cut four ¾" walnut dowels 1⅝" long and glue them into the holes in the bottom half-lap joints. After the glue dries, belt-sand the dowels flush. Mark and cut a 1½" radius on the four bottom corners, then belt-sand them smooth.

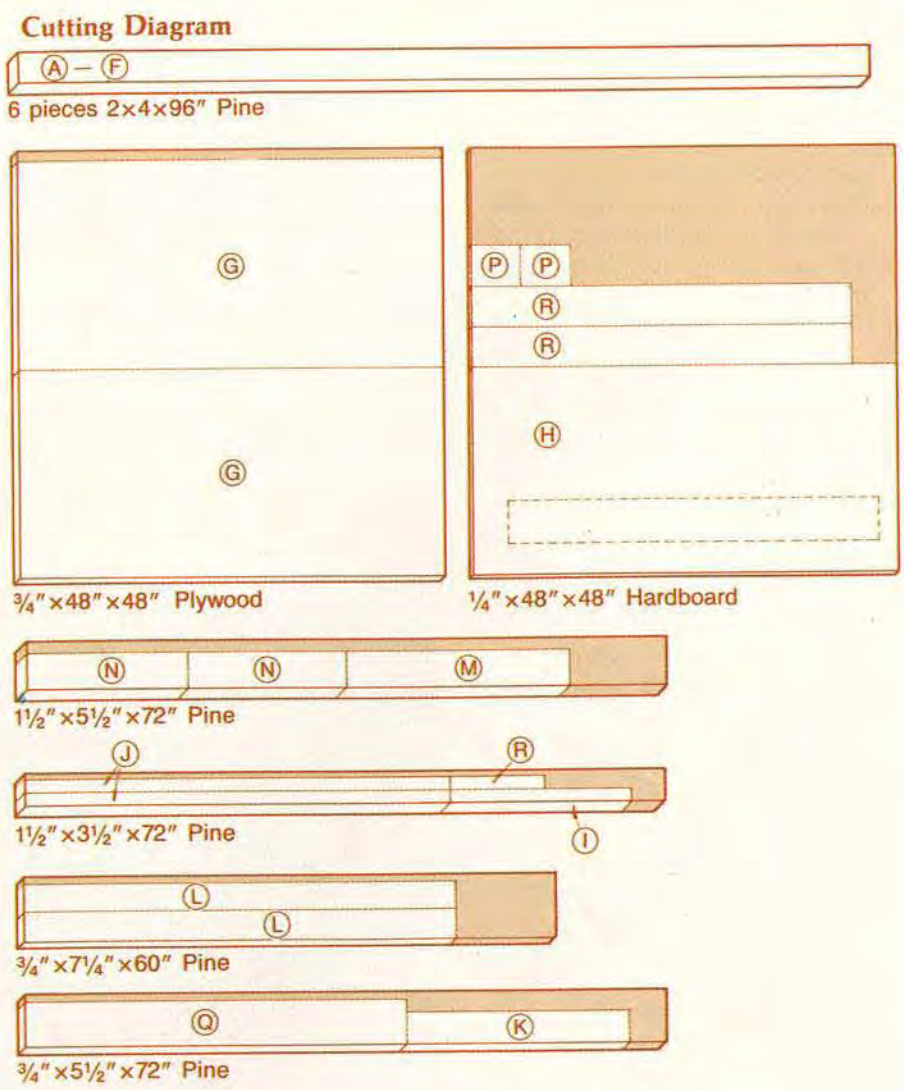
7 Glue and clamp the cross members (C, D) between the leg/rail assemblies. Bore ¾" dowel holes through the upper lap joints and 1½" into the ends of the cross members. Cut ¾" walnut dowels 3" long, then glue and insert the dowels through the half-lap joints and into the ends of the cross members. After the glue dries, remove the clamps and sand the dowel ends flush.

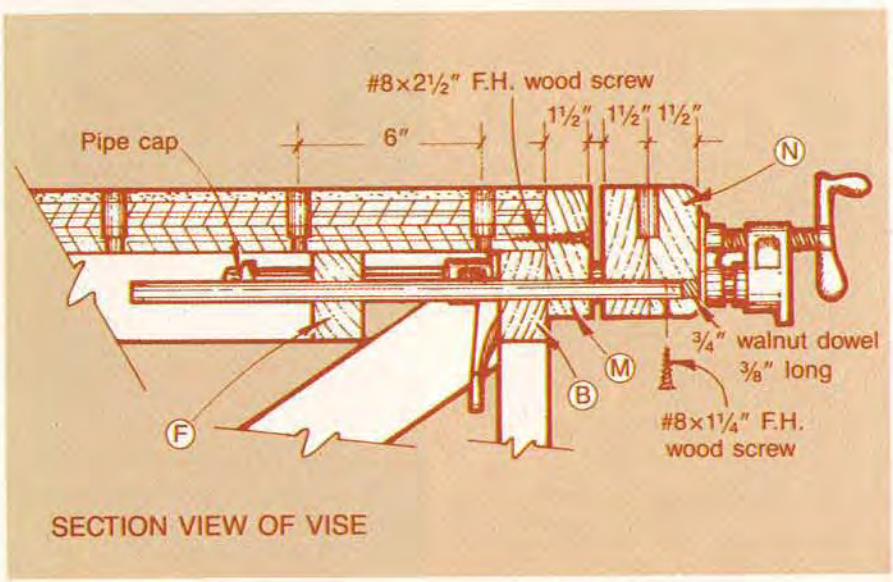
8 Cut the angled ends of the strut (E), then glue, clamp, and dowel E into position. After the glue dries, sand the entire base assembly smooth.

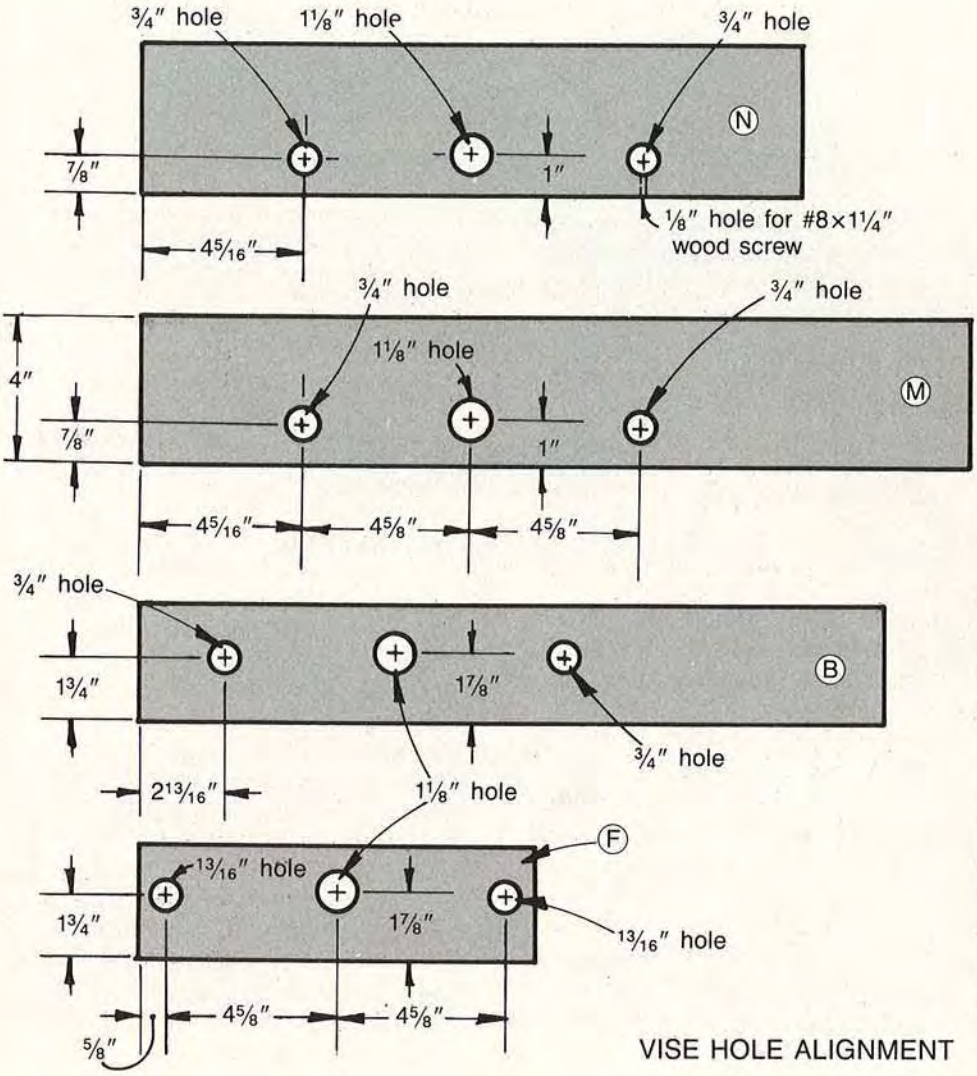
Constructing the workbench top

1 Rip the plywood pieces (G) and hardboard (H) to size. (We used double-faced tape to bond the two pieces of plywood and one piece of hardboard, then cut all three pieces at once for uniformity.)

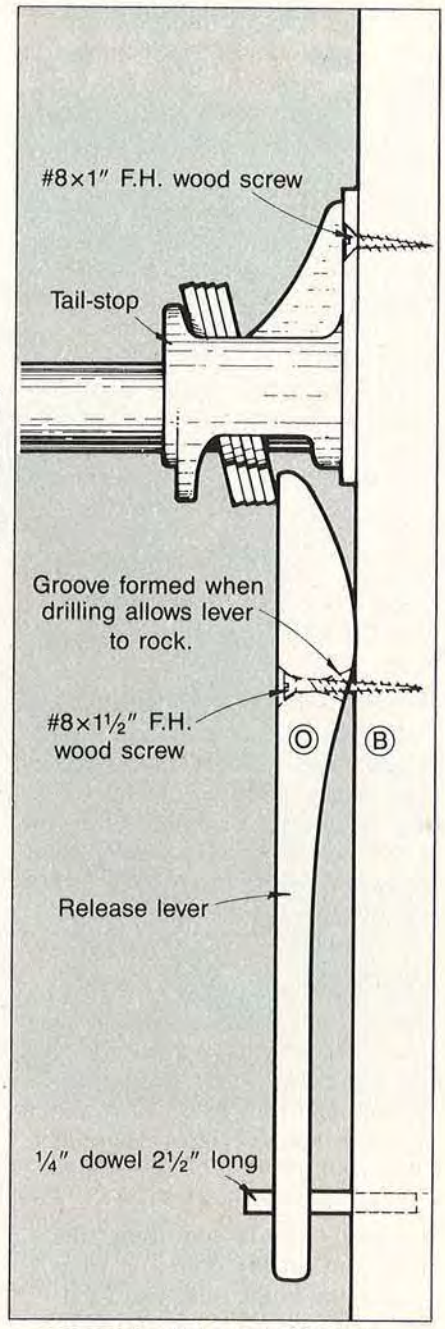
2 Glue and clamp the two pieces of plywood together, being careful to keep all four edges flush. After the glue dries, mark the location of the tool tray where shown in the exploded-view drawing. Drill a hole large enough for a jigsaw blade and cut the opening to size. [The tool tray fits snugly between two cross members (C).]





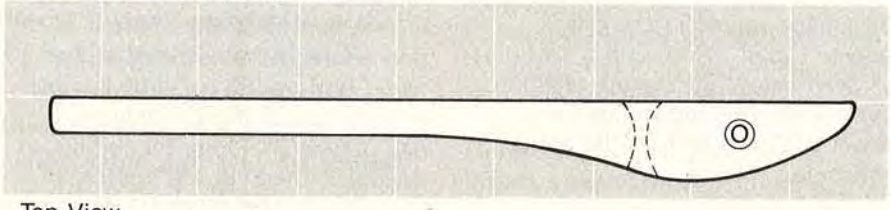


VISE HOLE ALIGNMENT

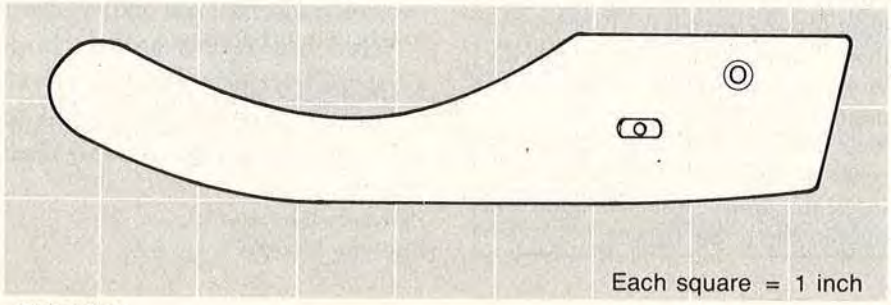


QUICK-RELEASE DETAIL

CLAMP RELEASE LEVER



Top View



Side View

3 Rip and crosscut support pieces I and J to size. Glue and clamp them to the bottom of the plywood flush with the outside edges. Remove any glue squeeze-out from the outside edges.

4 Position the plywood top (G) on the base assembly. Drill pilot holes, then glue and screw the top to the base using #8 × 2½" wood screws.

Continued

5 Rip and crosscut trim pieces K and L to size plus 1" in length. Cut M to size then set it aside for now. Miter-cut one end of each L and both ends of K to finished length.

6 Position the hardboard (H) on top of the plywood. Drill ¼" holes ⅜" deep for plugs along the outside edges of pieces K and L. Drill a pilot hole through the center of each plug hole for the #8×1½" wood screws used to attach the trim pieces to the bench top. Glue and screw the trim pieces to the bench, flush with the top of the hardboard.

7 Cut ¼" pine plugs ½" long, then glue and insert them over the wood screws. Belt-sand the plugs flush with the trim pieces.

Building and installing the vise

Note: This quick-clamp end vise, first featured on page 88 of the February, 1985 issue, made a real hit with *WOOD* readers. It's a simple, inexpensive device that does the job of vises costing several times more.

1 Laminate two pieces of ¾" thick pine to form the vise jaw (N). Bore two ¾" holes for the guide rods and one 1⅛" hole for the black pipe through end trim piece M as dimensioned in the Vise Hole Alignment Drawing.

2 Clamp M to N and, using the holes you already drilled in M as a positioning guide, drill like-sized holes through N. Glue and fasten M to the workbench top using #8×2" wood screws covered with plugs. Drill corresponding holes through top rail B, again using M as a guide.

3 Cut two ¾" steel rods to 24", and one ¾" black pipe (outside dimension 1$^{1}/_{16}$") to 20".

4 Cut two ¾" walnut dowels ⅜" long and glue them into the holes in the vise jaw (N) to cover the bar ends as shown in the Section View Drawing.

5 Bore holes in F as dimensioned in the Vise Hole Alignment Drawing. Position F under the workbench top and install the pipe and bars to align F with M. Drill two pilot holes through F and fasten it to the bottom of the workbench top with ¼×4" lag screws.

6 Install the guide bars through vise parts N, M, B, and the pipe clamp tail-stop, then on through F. Fasten the pipe clamp tail-stop to rail B with a #8×1" wood screw, as shown in the Quick Release Detail. Attach the pipe cap to the end of the pipe under the workbench top and the crank mechanism to the other end of the pipe.

7 Using a ⅛" metal-cutting bit, drill a hole 1¼" deep through the bottom of N and through the center of each guide bar as shown in the Vise Hole Alignment and Section View Drawings. Now, install #8×1¼" screws to hold the guide bars in place.

8 Cut the lever O to size as indicated in the Clamp Release Lever Drawing, then drill the ⅛" hole where indicated. Now, wiggle the bit from side to side to form a groove so that the lever can rock back and forth on the mounting screw (again, see drawing).

9 Fasten the release lever (O) so that it rocks on the inside of top rail B. The end of the lever is positioned to release the spring-loaded tail-stop as shown in the Quick Release Detail. Now drill a ¼" hole ¾" deep below the handle of the lever, then glue and install a ¼" dowel 2½" long to keep the lever horizontal.

Note: To use the vise, pull the release lever toward top rail B. This releases the tail-stop, allowing you to pull the vise outward. When you reach the desired clamping distance, release the lever and give the clamp a quick jerk to set the tail-stop on the black pipe. Insert the project to be clamped and tighten the screw handle.

10 Clamp N tightly against M. Using a ½" round-over bit, rout the top outside edge of the bench top, being sure not to rout where M and N meet. Sand the round-over and pine pieces smooth.

Making the tool tray

1 Rip and crosscut the tool tray pieces (P, Q, R) to size. Glue and nail the hardboard sides (R) to the pine bottom (Q), then nail the ends (P) to the pine bottom.

2 Insert the tool tray into the hole cut in the plywood top and nail through the sides and ends to attach it to the bench top.

Final assembly

1 Apply double-faced tape to the plywood top (G) and set the hardboard in place, noting the location of the tool tray cavity. (While carpet tape worked fine for us, you may want to flush-mount a few screws to hold down the hardboard.) Don't glue it in position—you may want to replace the board in the future. Drill a hole through the hardboard and into the cavity large enough for a flush-cutting router bit. Fit your router with a flush-cutting bit and, using the tool tray sides as a guide, rout the hardboard opening to size.

2 Bore 1" bench dogholes 1¼" deep through the bench top (G, H) as spaced in the exploded view drawing. Bore corresponding holes in vise part N. Center-bore a ⅞" hole through the rest of the plywood bottom (G) to allow sawdust to fall through the doghole. Cut 1" oak dowels 2¼" long for the bench dogholes, then cut a ¾" notch ½" deep in one end of each. (We clamped each dowel in our newly constructed bench vise and cut the notch with a handsaw.)

3 Finish-sand the entire assembly, then oil or varnish the pine, and oil the hardboard top. ■

Design: Kim Downing
Photographs: Bob Calmer
Illustrations: Bill Zaun

WOOD TURNING BASICS

turning between centers

Do woodturners really have more fun? From everything we can tell, they certainly do. And we think we know why! It's the almost instant gratification they get as the gouge or the skew or the parting tool puts the finishing touches on what just a short time ago was an undistinguished-looking chunk of wood, but now is an object of rare beauty. It's that simple—wood turning is fast and fun. Maybe it's time you step up to the lathe and take your turn. You'll never regret it!

There's a lot to know about wood turning, a lot of territory to cover. After all, some people spend years mastering this truly artistic form of woodworking. We've decided to delve into turning between centers this time, and in an upcoming issue, we'll talk faceplate turning.

Here's what you'll need

What's a woodturner without a *lathe*, right? If you don't have one already, our lathe buymanship article on page 68 will help you decide which of the many options available today is right for you.

The lathe plus five *turning chisels* will enable you to make all the cuts necessary to turn any between-centers project. A ½" gouge and a ¼" version of the same chisel serve double duty. They do the rough cutting necessary to round-down the turning square to a cylindrical shape. And they also come in handy when you want to make a cove, or concave, cut. We use a *skew* that's anywhere from ½" to 1" wide to smooth the ridges left from rounding-down the stock with the gouge. And for making beads (the convex portion of turnings), we rely on a ½" diamond-point parting tool. This same tool also cuts grooves. (See page 79 for more information about these chisels.)

You'll also need the other tools and materials shown in the photo above. Note especially the *face shield*, which safeguards you against flying wood chips while you're operating the lathe. Wearing it is an absolute must. We'll talk about the uses of the other items later.

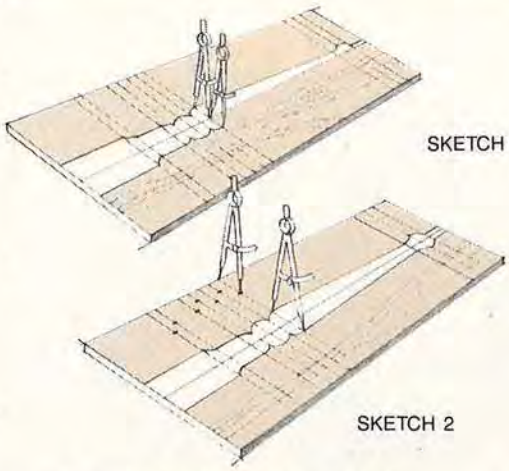
Continued

LAYING OUT YOUR TURNING PROJECT

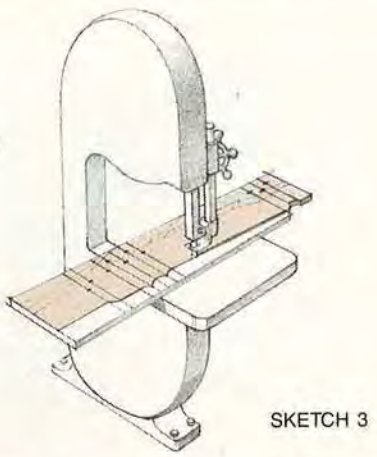
As a woodturner, you need to develop the skill of making templates. Why? Because the template serves as a valuable referencing aid. It allows you to check visually on the progress of your turning. Templates also allow you to reproduce several identical pieces of a given shape.

To fashion a template, start by cutting a ⅛" piece of plywood or hardboard to the length of the turning. (We use Baltic birch plywood for our templates because of its stability and light color.) Then, draw a line lengthwise down its center.

After doing this, if you don't have a scaled drawing to work from, draw the profile of the turning as best you can. Then continue to refine the shape until you have an attractive profile. If you do have a scaled drawing, transfer the outline of the turning to graph paper and onto the template material.


SKETCH 1

SKETCH 2


SKETCH 3

Draw a line perpendicular to the center line at every point where the profile changes direction. Then, using a compass or dividers, transfer the points of intersection to the opposite side of the lengthwise line as shown in sketch 1.

Once you're satisfied with the shape you've sketched, measure each diameter and transfer it to one edge of the template material as shown in sketch 2. These marks allow you to set your outside calipers easily when checking the diameter of the turning at various points.

Now cut the template along the lengthwise line, make relief cuts, and saw along the profile line as shown in sketch 3.

PREPARING THE STOCK FOR TURNING

How you go about this depends on whether you plan to do a fully turned project or one that's partially turned. In the photo sequence below, we'll show you how to prepare both types. The first three photos apply to partially turned work and the second three apply to both.

Photo A
With partially turned projects, it's important that the stock be square. If you're working with stock whose surfaces aren't at right angles to each other, follow this procedure.

Clamp the stock in a vise and plane one surface smooth. (You can also joint the surface smooth if you have a jointer.) To check the surface for true, hold the blade of a try or combination square directly on the surface and look for daylight along the blade.

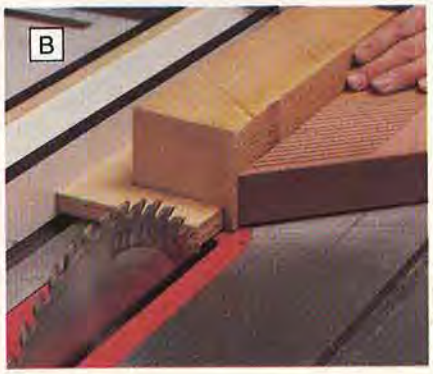


Photo B
Lay the stock on a plywood scrap so that one edge of the stock overlaps the edge of the plywood. (The opposite edge of the plywood must be straight.) Then trace the outline of the stock, cut the waste material away, and fit the stock into the jig you've just created. (Make sure the planed surface is on the bottom.) Now slowly and carefully pass the stock through a table saw as shown. Note that we used a featherboard to help control the cut.

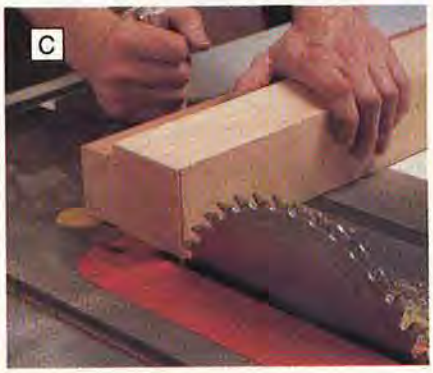


Photo C
As soon as you have two sides of the stock squared up, you can then discard the jig and square up the other two surfaces with your table saw. Next, you need to square up the ends of the stock. Doing this ensures that the turned portion will be at a right angle to the ends, and it will also help reduce vibration when you put the stock on the lathe and begin rounding down. Using your table saw miter gauge and a stop block, make both cuts.

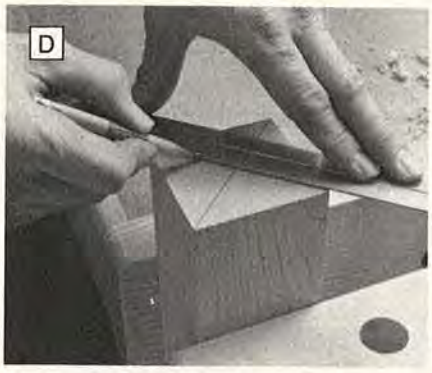


Photo D
Clamp the stock in a vise, and—using the blade of a square—draw diagonal lines from corner to corner on both ends of the stock. An accurate centerpoint is important especially if you're doing a partially turned project. It ensures that the turned portion will be the same distance from each edge of the unturned portion. It also lessens the amount of vibration during the rounding-down process.

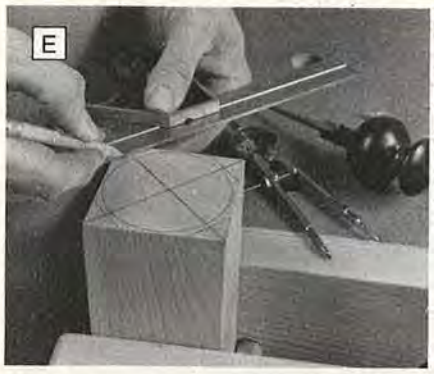


Photo E
Make a starter hole at the centerpoint of each end with an awl or center punch. Want to make the rounding-down process a little less bumpy and easier on your turning tools? If so, mark the turning's greatest diameter with a compass and mark a line just beyond the outside of the circumference line at each corner as shown. (Experienced turners don't bother with this step, but it's worth knowing about.)

Photo F
With the turning square held securely in a bench vise, remove the waste material with a bench plane as shown in the photo above. (Note that we're planing the stock at an angle rather than straight on.) Or, set your saw blade at a 45° angle, adjust the rip fence as needed, and run the stock through the table saw. If you're doing a partially turned project, you'll want to stop the cuts short of the shoulder.

MOUNTING THE STOCK ON THE LATHE

Photo A
Begin by aligning the centerpoint of the stock with that of the drive center. Then, tap the stock with a mallet until the drive center spurs engage the stock. Don't beat on the stock; that's not necessary, and it's hard on the headstock bearings. If you'd rather, you can also remove the drive center, saw shallow diagonal cuts from corner to corner with a handsaw, and tap the center into the stock.

Photo B
Move the tailstock to just shy of the point at which the tailstock center and the stock meet, tighten the tailstock, and use your lathe's tailstock handwheel to move the center into the stock. Here again, don't exert undue pressure; it's not necessary. If you don't have a ball-bearing center (a good investment if you don't already own one of these nifty accessories), apply some paraffin wax to the stock where it meets the center to reduce friction and possible burning.

Photo C
After tightening the tailstock and the center, move back up to the headstock. Wrap a piece of masking tape around the drive center, and mark one of the spurs and its corresponding location on the end of the turning. This is insurance—just in case you have to remove the turning from the lathe before it's finished and have to remount it later. (If you wish, you can also permanently notch one spur with a file.)

Photo D
We've included this photo to show you the importance of having the tool rest parallel and close to the turning at all times. The rest should also be about halfway between the top of the turning and the centerpoint. Note: Make sure that you always shut off the lathe before moving the tool rest. Also rotate the stock to make sure it and the tool rest won't make contact.

ROUNDING DOWN AND TURNING THE STOCK

Photo A
With the lathe set on a low speed (around 800 rpm), use a sharp gouge to begin the rounding-down process. Work slowly from the headstock end down, and don't try to remove too much material at once. Notice the angle at which the gouge is being held. At this angle, you're cutting the stock rather than scraping it. See the photo at the top of the next page for an example of how the scraping action differs from the cutting action.

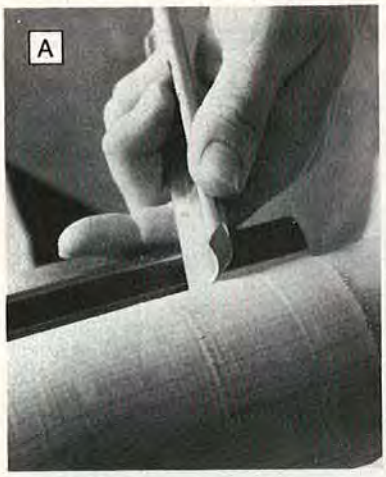
Photo B
You'll have to move the tool rest several times while you're rounding down. Be sure to keep it close to the stock; this gives you greater control of the tool. If you want to put a mirror-like sheen on the cylinder, hold the skew as shown, with the bevel rubbing the cylinder and the heel of the blade doing the cutting. Done correctly, this procedure all but eliminates sanding.

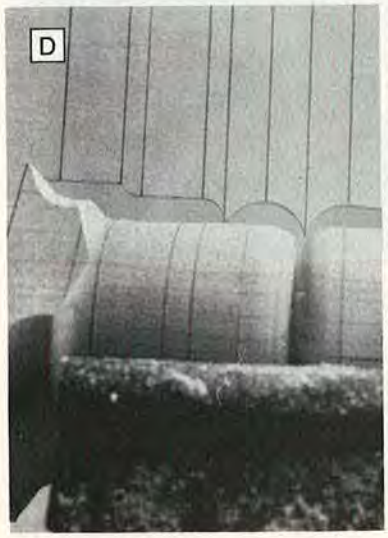
Photo C
Now lay your template up against the turning, and transfer the marks on the template to the turning. Make sure when you do so that the end of the template aligns with the end of the stock. In the example shown, we marked the end of the shoulder using a combination square, then started the lathe and marked the other lines.

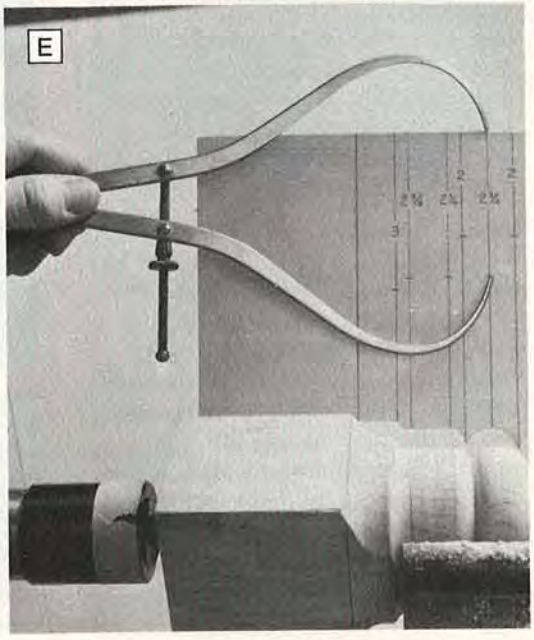
Photo D
Position the template as shown in this photo, then begin shaping the project. By sighting across the turning onto the template occasionally, you can tell when you're approaching the correct shape. This technique also keeps you from making incorrect cuts—a common occurrence, especially if you're a beginning turner.

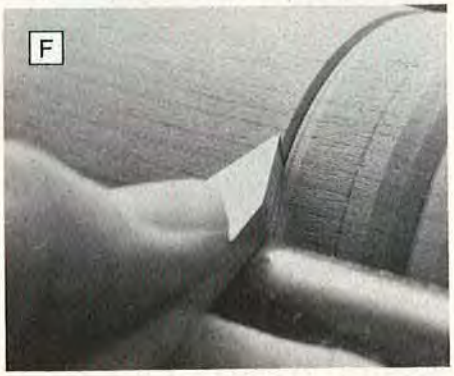
Photo E
As you approach the finished diameter of the various segments of the turning, check your progress often with an outside calipers. Simply adjust the calipers to match the marks on the template, and keep turning until the calipers slips around the portion of the turning you're checking.

Photo F
You can make any between-centers project once you learn to make beads and coves. Be advised, though, you'll have to practice a lot to become good at making either. To make a bead, first lay your parting tool flat on the tool rest and score both lines that define the width of the bead.









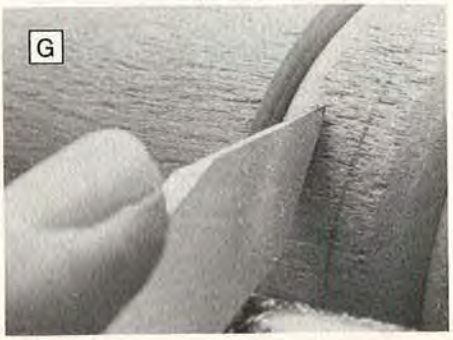


Photo G
Then, make a mark at the center of the bead. Position the parting tool at a slight angle to the tool rest and a bit on edge as shown, then roll the tool toward the score mark. The tool will be almost as shown in the previous photograph at the end of the roll. Make another, deeper score line and then another roll-action cut. Repeat this process until the bead is formed.

Photo H
To make a cove, position the gouge as shown. Don't go so deeply that the gouge's edges catch the stock.

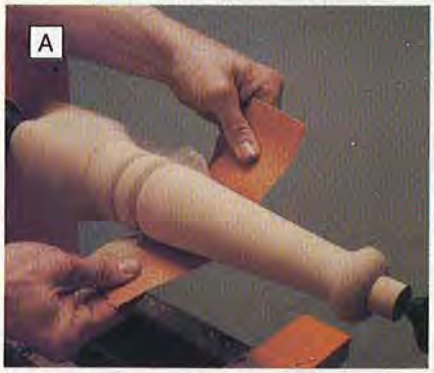
Photo I
To smooth the edges of the cove, hold the gouge at the angle shown. Work from the side in toward the center of the cove.

FINISHING YOUR TURNING PROJECT

Photo A
With most woodworking projects, preparing the surface for a finish is a drag. Not so with wood-turning projects. The lathe does the work for you—and in a big hurry. Just lay in a supply of 80-, 100-, and 150-grit sandpaper and begin sanding. By having the sandpaper beneath the turning, you can monitor your progress. Keep the paper moving.

Photo B
Once you've removed all the imperfections from the surface, stop the lathe and lightly hand-sand the turning in the direction of the grain with 150-grit. Holding your thumbs as shown allows the paper to conform to the object's shape. This light sanding removes those barely visible sanding marks left from across-the-grain sanding.

Photo C
Most turners like to finish their projects right on the lathe because it's so quick and easy. To protect your clothes and surroundings from splatters, set up some kind of a simplified finishing booth such as the one shown here. We usually use scrap cardboard. When applying the finish, be sure you hold the rag with both hands so you don't accidentally tangle it up in the lathe.



Should you scrape or cut?
Much has been written about whether or not novice woodturners can learn to use their chisels properly as cutters rather than scrapers. Professional and experienced amateur woodturners use their tools to cut because that action leaves the surface of a turned project much smoother than the scraping action. The result: less time spent sanding the project and less distortion of the desired shape. We think even beginners should take the time to learn to turn the correct way—cutting. It takes longer to master this technique, but the quality of your work will show.

How slow should you go?
As a general rule, the larger the stock you're turning, the slower the lathe speed should be, especially during the rounding-down process. We've found that a speed of 800 to 1,000 rpm works well for rounding-down stock that's 2″ or less. When we reach the cylinder stage, we increase the speed to around 1,500 rpm. It's not necessary to speed up the rpm for sanding.

Practice makes perfect
In wood turning, there's no better way to learn than by making the shavings fly. So, if you're just getting started, buy some scrap stock and practice your moves before you take on a for-real project.

The importance of sharp tools
Sharp lathe chisels make a world of difference to you as a turner. We hollow-grind ours on a coarse grinding stone at slow speed, then whet them with a slipstone. Sharp tools held at the correct angle will yield shavings, not sawdust.

What's available in turning stock
You can purchase turning squares (typically in ash, cherry, mahogany, maple, oak, and walnut at some lumber dealers and through mail order) or make your own from up to 3″-thick stock. Or, you can laminate several pieces of thinner stock. ■

Print this article

QUICK AND PRETTY BUD VASE

It's the ideal project for a beginning turner—quick and easy to accomplish (we did ours in just 45 minutes, start to finish). You experienced turners will appreciate this vase if you're scouting for a distinctive gift item to keep on hand. Watch out, though—you're sure to get plenty of requests for this well-turned home accessory!

Turning the vase

1 Start with a 2½" walnut turning square or laminate thinner stock to size, then crosscut the stock to 9". (You may or may not be able to purchase turning squares locally. We ordered ours from Bob Morgan Woodworking Supplies, 1123 Bardstown Road, Louisville, KY 40204; catalog $1.) Don't let our choice of wood limit you; use another type or even a combination.

2 Mark diagonals on each end to locate the centers, then mount the stock on the lathe. (We find it easier to mount the stock accurately if we punch a small indentation at the center point of each end.)

3 With a gouge, round down the stock to a cylindrical shape. Then, referring to the Vase Profile Drawing, lay out and turn the vase to the finished shape, forming the base at the live end of the lathe. (If this is your first turning project, refer to the preceding article, "Turning Between Centers," for help with technique.)

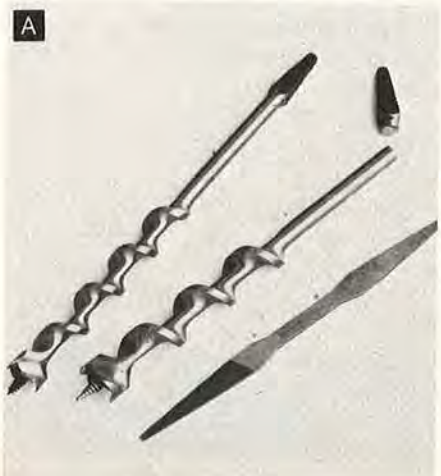
4 With the vase still on the lathe, sand it with a succession of grits, starting with 80, then moving up to 100, then 150 grit.

Boring the hole

Note: Center-boring a hole in a vase of this size can be tricky on a drill press. We've had better results on our lathe using the process described below. You'll have to sacrifice an auger bit for the setup, but it's well worth it. In case you're wondering if a spade bit wouldn't work just as well, we've found that they tend to wander and aren't as accurate.

1 Start by cutting off the tang end of an 11/16" auger bit with a hacksaw. Then, using an auger bit file, file the screw threads to a point on the spur end as shown in photo A, which includes the bit before and after filing and cutting, and the auger file we used. (An auger bit file allows you to file the screw point without damaging the rest of the spur). Filing the threads prevents the bit from being drawn into the stock too quickly and possibly splitting the wood.

A



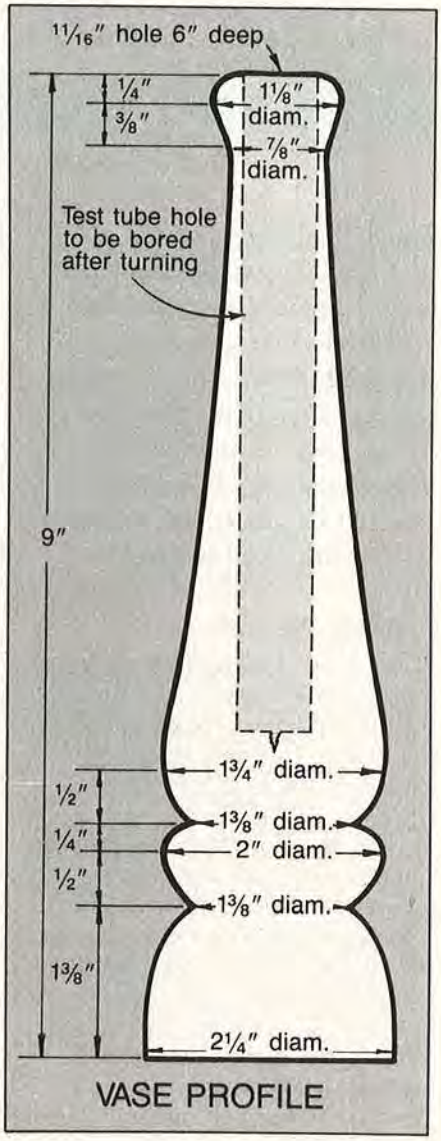
2 Flip the vase around between centers so the base is now centered on the tailstock. Using a hand screw, clamp the neck of the vase as shown in photo B. (We taped scrap spacers to the jaws of the clamp and taped the neck of the vase to prevent marring, and to help prevent it from turning when boring the hole.)

B

3 Once the vase is firmly clamped in its horizontal position, slowly and carefully back the tailstock and vase/clamp assembly away from the lathe headstock. Now, remove the spur center from the live end of the lathe and replace it with a chuck fitted with the filed-down auger bit.

4 Move the tailstock and vase/clamp assembly to the auger bit, and check that the point of the bit is centered with the end of the vase. (It may take a bit of adjusting and reclamping to get the bit lined up with the exact center of the vase, but it's worth the time. You'll find it much easier to bore when the two are perfectly centered.)

5 With the lathe set at a slow speed (800–900 r.p.m.), begin to bore the hole by turning the tailstock-spindle feed hand wheel or crank. This will slowly push the vase into the auger bit. You'll need to turn the lathe off periodically, crank the spindle back with the feed wheel, and move the tailstock and vase up to the bit and start over again. This resetting also gives the bit time to cool off. Bore out



the center of the vase deep enough to house the glass test tube. (You can buy test tubes through scientific supply companies, medical supply outlets, and some hobby stores. We used a Pyrex No. 9800 that measures 6" long with a 5/8" outside diameter.)

6 Remove the clamp and tape from the vase, sand off any marks that resulted from the clamping and boring. Finish-sand the vase with 220-grit paper, sanding with the grain. Finish the vase as desired; we applied several coats of Deft clear lacquer using steel wool between coats. ■

Design: Jim Boelling
Photographs: Bob Calmer
Illustration: Bill Zaun

LATHE-TURNED ELEGANCE
PEDESTAL DISPLAY STAND

Even a lush fern takes a backseat to this graceful pedestal table. The black walnut brings a richness that complements the decor of any room. But the real joy comes from developing your turning skills on a project that yields impressive results. Be careful, though—lathe work is addictive!

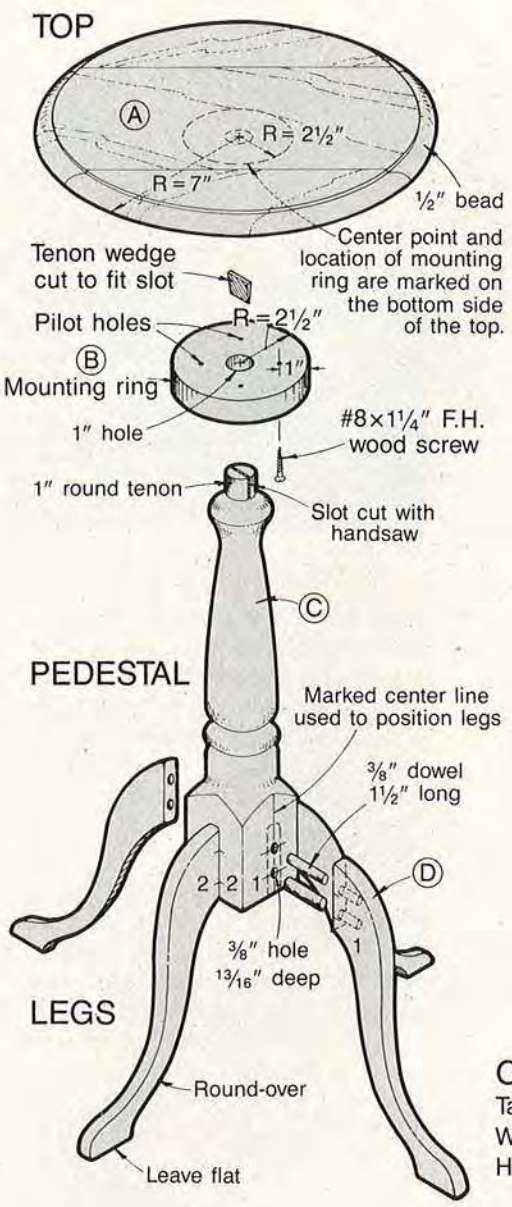
Building the top

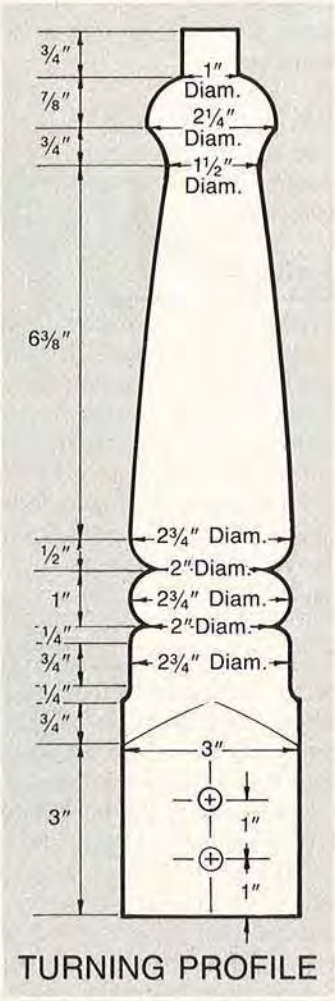
1 Rip, then crosscut enough ¾" walnut boards to make a 15" square for the top (A). Glue and clamp the boards, checking that the top surface of the boards is flush.

2 After the glue dries, remove the clamps, scrape off any excess glue, and sand smooth. Draw diagonal lines from corner to corner to find the center of the square, and use a compass to mark a 7" radius on the bottom. (If you don't have a compass large enough to mark a 7" radius, cut a piece of scrap and drive a nail through one end. Seven inches from the nail, drill a hole large enough for the lead of your pencil. Center the nail on the bottom of the table and mark the circle.) Now mark a 2½" radius for the mounting ring on the bottom of the tabletop.

3 Cut the top to shape, then sand the edge smooth. (We cut slightly outside the cutoff line with a bandsaw, then used a disc sander to finish shaping.)

4 Glue up a 6" walnut square for the mounting ring (B), then mark its center and scribe a 2½" radius. Cut and sand it to shape as you did the tabletop. Bore a 1" hole through the center point of the mounting ring. Now drill four pilot holes through it for the screws that will fasten the ring to the top.

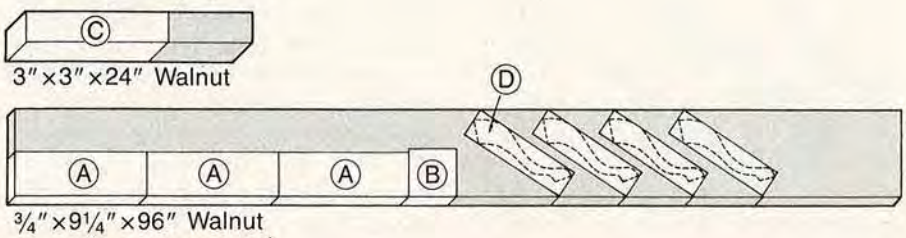


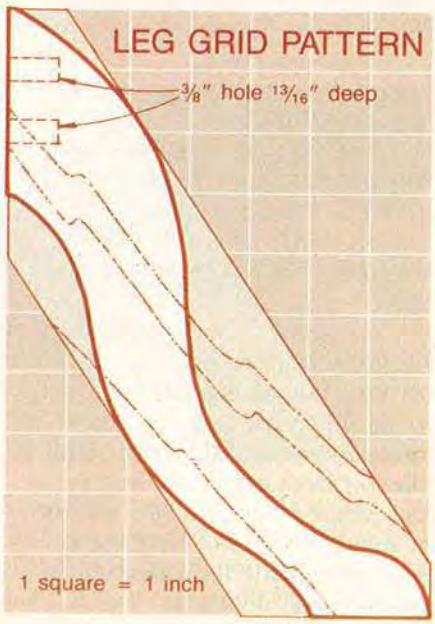


OVERALL DIMENSIONS

Tabletop diameter — 14"
Width of base — 17"
Height — 23"

Cutting Diagram





Bill of Materials

Part	Finished Size*			Material	Qty.
	T	W	L		
A*	3/4"	14" diam.		walnut	1
B*	3/4"	5" diam.		walnut	1
C	3"	3"	15 1/4"	walnut	1
D	3/4"	3"	12 1/4"	walnut	4

*Some parts are cut larger initially, then trimmed to finished size. Please read instructions before cutting.

Supplies: 8—3/8" dowels 1 1/2" long, 4—#8×1 1/4" F.H. wood screws, finish

5 Rout the bead along the top edge of the tabletop with a 1/2" round-over bit. Switch to a 3/8" round-over bit and rout the bottom of the mounting ring.

Turning the pedestal

1 Square up a 3" turning square, then trim it to a finished length of 15 1/4" for the pedestal (C). If you don't have 3"-square stock, laminate thinner stock to size.

2 Mark diagonal lines to find the center of each end, then center-punch each end and mount the square onto the lathe.

3 Scribe a pencil mark 3" from the end of the square nearest the headstock. Starting at the 3" mark, turn the pedestal to its finished shape, using the Turning Profile Drawing as a guide. (You may want to refer to "Turning Between Centers" in this issue for more information on technique.)

Building the legs

1 Enlarge the Leg Grid Pattern and lay out the shape of one leg (D) on a piece of walnut as shown. Now, cut one leg to shape, sand out the saw marks, and use it as a template to mark the remaining legs. Cut the legs to shape.

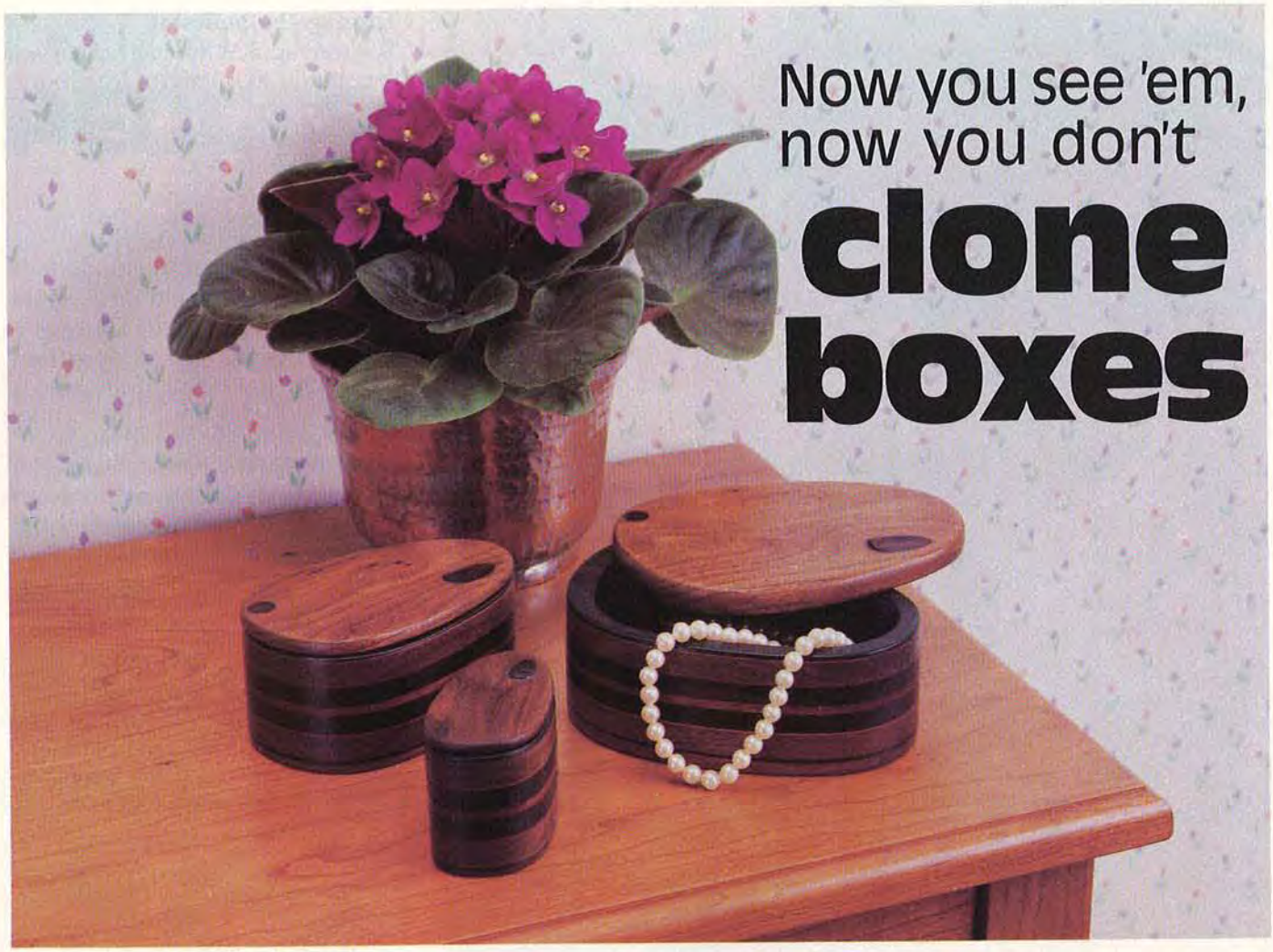
2 Using double-faced tape, tape all four legs together, edges flush. Clamp the legs together to ensure that all the pieces are firmly secured to one another.

3 Contour-sand the edges of the legs until all four legs are one uniform shape. Remove the clamps and the tape from the legs.

4 Reference-mark each leg with a numeral (1, 2, 3, or 4), then place corresponding marks on the pedestal. This will enable you later to match the dowel holes in each leg to its corresponding side of the pedestal. Scribe the vertical center of each face of the squared portion of the pedestal as shown in the exploded view drawing. Now, mark the center of the mating surface of each leg.

5 Drill two 3/8" dowel holes 13/16" deep into each leg and insert a 3/8" dowel center in each hole. Align each leg with its corresponding side on the pedestal and squeeze

Continued on page 77



Now you see 'em, now you don't clone boxes

Everyone loves a nice surprise, and that's just what you get with these beautiful little boxes-within-boxes. All three are from but one block of laminated scrap wood. Use them for jewelry or as conversation pieces.

Note: *You'll need thin stock and veneer to make this project. You can either resaw and sand thicker material or purchase stock in the appropriate thickness. (We mail-ordered ours from Constantine's, 2065 Eastchester Rd., Bronx, NY 10461.)*

Also, we suggest several species in the Bill of Materials, but you can use any woods that suit you. (We used one combination for the boxes in the finish photo and another for the boxes in the how-to photos.)

1 Select an assortment of solid hardwoods and veneers that complement each other. Cut the pieces to length and width. Stack the pieces, rearranging them until the combination appeals to you. (Since this stack will eventually be cut on a jigsaw, we found it best to keep its height under 2".)

2 Glue and clamp the stack of hardwoods and veneers together. (We spread a thin, even coat of glue on all surfaces and used several clamps to ensure a good lamination.)

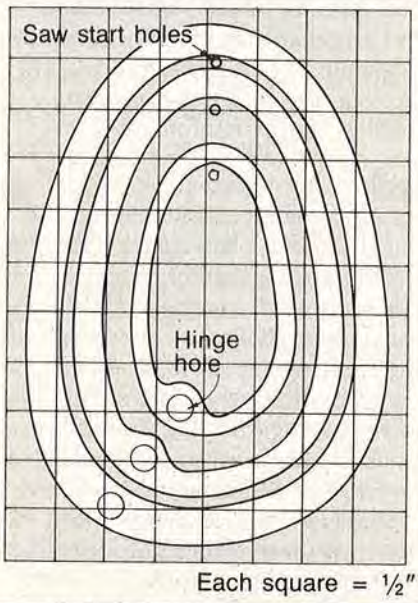
3 Once the glue has dried, remove the clamps and trace the pattern for the three boxes onto the laminated block. Cut the exterior contour of the largest box on a band saw, working slowly to ensure that the box exterior turns out smooth and even.

4 Cut the interior shape for the first box, leaving enough wall thickness at one point to house the ¼" hinge pin (see grid drawing). Drill a hole just large enough to insert your jigsaw blade through, and cut the box interior. Cut slowly and use a sharp blade for a smooth cut and even wall thickness.

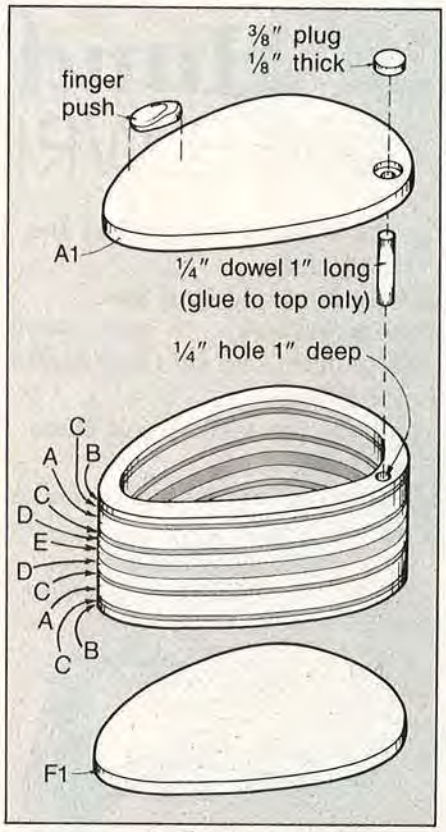
Bill of Materials					
Part	Finished Size			Material	Qty.
	T	W	L		
A1	3/8"	4"	5½"	walnut	1
A2*	¼"	4"	5½"	walnut	1
A3*	⅛"	4"	5½"	walnut	1
B	⅛"	4"	5½"	bubinga	2
C	1/28"	4"	5½"	mahogany veneer	4
D	¼"	4"	5½"	bubinga	2
E	⅛"	4"	5½"	mahogany	1
F1	¼"	4"	5½"	walnut	1
F2*	⅛"	4"	5½"	walnut	1
F3*	1/16"	4"	5½"	walnut	1

Supplies: bubinga for finger push and dowel plug, ¼" dowel rod, oil finish

*These parts used as tops and bottoms on smaller boxes.



5 Sand the interior of the newly cut box (photo A) and the exterior of the stack lamination before cutting the next box. (We used a drill press fitted with a sanding drum for the interiors and a disk sander for the exteriors.)



6 Repeat steps 3 through 5 to cut and sand two more boxes from the remaining stock.

7 Drill a ¼" hole 1" deep at the hinge point in each box (photo B). (We wrapped freezer tape 1" from the bottom of the drill bit, then drilled until the tape came in contact with the wood, ensuring a 1"-deep hole for the hinge pin.)

8 Cut and glue a bottom onto each block. Using a band saw, trim the bottom piece flush with the exterior of the box.

Note: To vary the overall heights of the three boxes, we used a 3/8" cover (A1) and a ¼" base (F1) for the biggest box, a ¼" cover (A2) and a ⅛" base (F2) for the intermediate size, and a ⅛" cover (A3) and a 1/16" base (F3) for the smallest box.

9 Cut slightly oversized lids for each box on a band saw or jigsaw. Insert a ¼" dowel center in the hinge pin hole and position the cover over the box, press down slightly to mark the hinge pin location. Drill a ¼" hole through the lid, corresponding to the hole in the box, for the dowel. Glue the dowel flush with the top of the cover.

10 After the glue has dried, clamp the covers in position and drill a 3/8" hole ⅛" deep directly above the dowel, then glue a hardwood plug in the hole. Allow glue to dry and sand the plug flush.

11 With the covers in place, sand exterior edges for a perfect fit. (We taped the covers to the boxes to keep their edges flush, and moved the tape to opposite sides of the boxes as we sanded our way around the clone boxes on the disk sander.) A belt sander clamped to your workbench would work, also.

12 Place a small amount of paraffin on the dowel for smooth movement. Form a finger push (we chose bubinga) and glue it to the lid. Sand all surfaces smooth and apply finish of your choice. We used several coats of tung oil for the finish. Apply the first coat, let it soak in momentarily and wipe off the excess with a clean rag. We waited a day and applied a second coat in the same manner, again wiping off the excess. ■

Design: Alan Mills
Photographs: George Ceolla, Alan Mills
Illustrations: Bill Zaun

The Old Hand Ways

Print this article

THE WHEELWRIGHT

In his poem, Oliver Wendell Holmes illuminated the special nature of wheelwrighting. The wheelwright, perhaps more than any other woodworker, must know how to get the most from his wood. A wagon wheel must be light enough to move easily, yet be able to transport tons of civilization's baggage.

Hubs of the toughest stuff

A wheel is no stronger than its center, and the deacon of Holmes' poem chose elm, one of the toughest woods around, to form the hub.

Elm, with its grain fibers twisted and interlocked, withstands hollowing for the axle and mortising for a dozen spokes with nary a split or crack. But the hardy elm must season for seven years before use—as long as it would take to complete an apprenticeship in this trade.

Turning and mortising

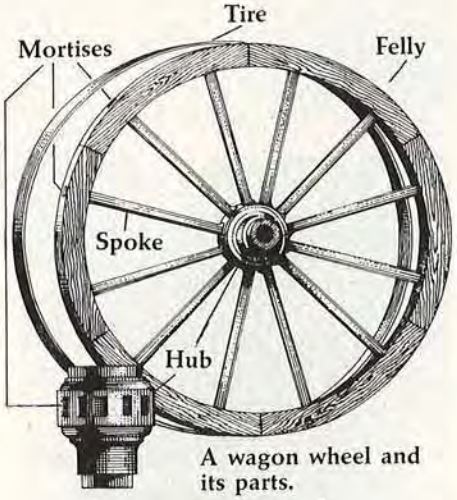
If you were a wheelwright's apprentice, you'd probably spend a lot of time cranking the huge flywheel of the lathe that turns the hub from seasoned elm. Turned true to a cylinder shape, the hub then submits to the wheelwright for mortising of the spokes.

By Roy Underhill

Master housewright at Colonial Williamsburg and host of the popular PBS series The Woodwright's Shop, *Underhill is also an author and lecturer.*

So the Deacon inquired of the village folk
Where he could find the strongest oak,
That couldn't be split nor bent nor broke,—
That was for spokes and floor and sills;
He sent for lancewood to make the thills . . .

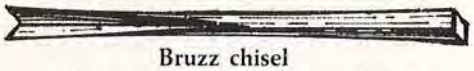
—Oliver Wendell Holmes,
The Deacon's Masterpiece



A wagon wheel and its parts.

Colonial Williamsburg master wheelwright Daniel Stebbins fits a felly to a carriage wheel.

Around the outside of the hub, he spaces equally with dividers the even number of marks for the auger holes. Once the auger bores out the mortises, the wheelwright cleans away the remaining wisps of grain with a *bruzz*, or corner chisel. Primarily a wheelwright's tool, the L-shaped bruzz is unsurpassed for working with and across elm's grain.



Bruzz chisel

With the mortising completed, the hub returns to the lathe for the final turning of the seats around, and at either end of, the bored-out axle hole. These smooth, even surfaces on the hub accommodate small hoops of reinforcing iron.

Spokes and shavings

As an apprentice, you'd next split out the spoke blanks from billets of straight-grained hickory, oak, or ash. While the hub is of wood that won't split, spokes are the better for the splitting. A spoke from split wood has the benefit of continuous grain from end to end, but sawn stock might show weakness if grain switches to the diagonal.

Shaping the spokes from split and seasoned stock calls for a knowledgeable journeyman with a sharp drawknife, since only experience can decide where to shave wood without sapping its strength. Holding the spoke in a long spoke vise, he trims away, keeping strength to the spoke's back by leaving wood, and lightness in its face by removing wood. Thus, the finished spoke is strong, yet resilient enough in its thinness to absorb shock.

On the end of the spoke that will go into the hub, the wheelwright saws a tenon. The other, outer, end is left unfinished to take the blows of the maul, for now each spoke must be driven securely into its mortise in the hub. When all the spokes are forced home, the

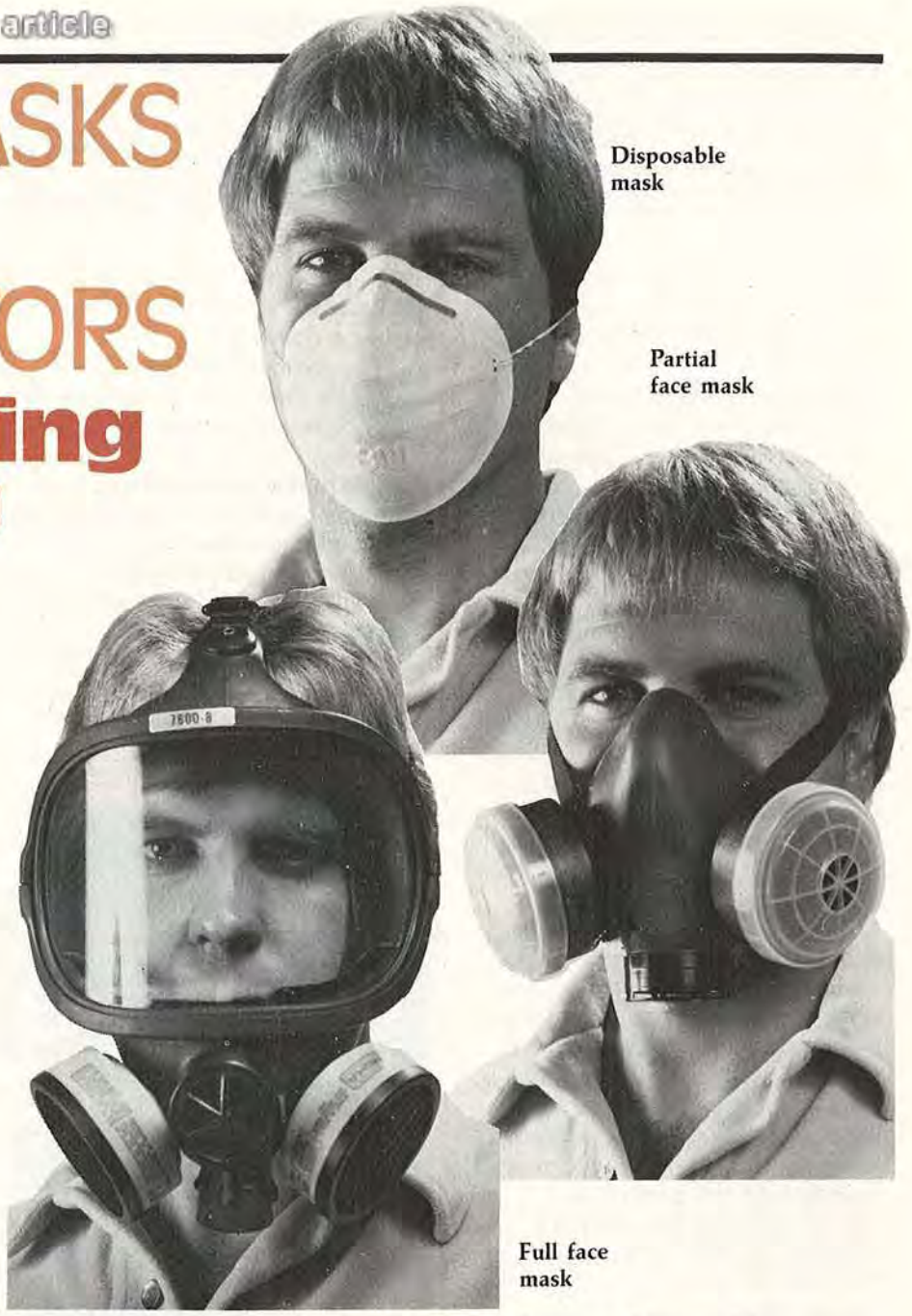
Continued on page 76

Print this article

DUST MASKS AND RESPIRATORS

determining what you need

Do you wear a mask when your workshop air clouds with sanding dust or hangs heavy with finishing vapor? If not, you should! Wood dust, and vapors or aerosols from wood finishing products, can be harmful to your health.



Full- and partial-face respirators from The Norton Company, Cranston, R.I.; courtesy W. W. Grainger, Inc.

About wood dust, the National Institute for Occupational Safety and Health says: "It is believed that the inhalation of fine dusts from wood, especially hardwood dust, causes nasal cancer."

Concerning finishing solutions, the verdict isn't any brighter. Northern Illinois University associate professor of industrial safety, Dr. Earl Hansen, reports that woodworkers during finishing may expose themselves to hazardous aromatic hydrocarbons consisting of benzene grains. Exposure to benzene has been correlated to numerous cases of leukemia.

If these statements spur you to search for protection, well and good. But you need to know what type of masks are available before you shop the safety equipment suppliers, tool retailers, large department stores, and major hardware dealers carrying them. You can also buy masks mail order from woodworking suppliers.

The disposable dust mask

Not all woodworking operations require a dust mask. When you're creating particles small enough to inhale, though, you need one.

Lots of woodworkers reach for the low-cost disposable mask in these situations. While paper masks do offer protection, remember that their design and composition won't allow them to form a totally dustproof seal. Even a new mask lets dust in and this condition gets worse as it becomes shopworn and clogged. So don't overuse disposables. One long sanding session can render them ineffective.

Partial face masks, a popular choice

Fairly common among home woodworkers, these respirators rely on replaceable cartridges and filters to trap and neutralize harmful elements. Some use a single filter or cartridge to do the job; others have two. To facilitate communication while worn, they're available with a speaking diaphragm.

Partial face masks come in three degrees of protection.

Continued on page 78

Print this article

READERS, IT'S YOUR TURN! PROJECT

A. Redwood strip canoe

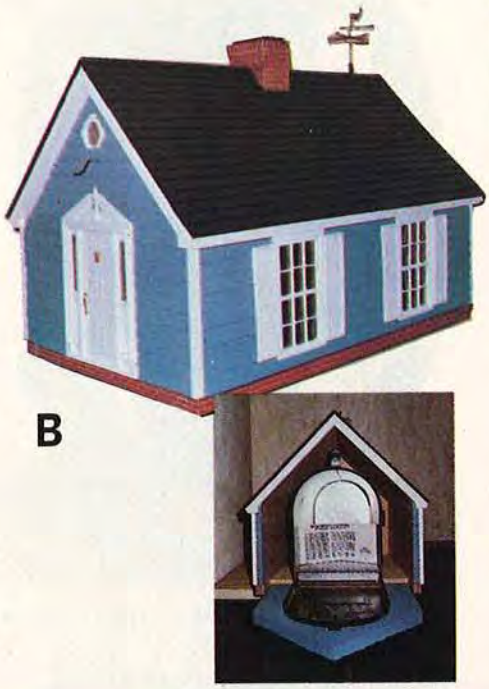
Thomas Hartford Moore of Martinez, California, built this shipshape canoe with ¾″×¼″×16′ strips ripped from 1×6 redwood. He edge-glued them over a plywood form to the hull shape, removed the hull from the form, and sanded it smooth inside and out. Then Thomas applied fiberglass over the redwood on both sides. Mahogany splash decks help to finish off the bow and stern. Other trim includes seats with woven cane inserts, gunnels, and thwarts—all of ash. Weighing in at 60 pounds, his sleek canoe is 16′ long with a 31″ beam. After weeks of work, Thomas checked out a high-running stream to test his craft's seaworthiness, and at last report he and the canoe were floating along in grand style.

B. Mail finds a home

The postman making his first delivery to this unique rural mailbox probably paused to knock before entering. Walter B. Rushton, of Albany, Georgia, made the scrapwood project for a local contractor's office. He used a plywood frame; redwood for siding, roof, and "brick"; and pine for windows, shutters, and door. Brass scraps provided the door lock and knocker and the weather vane. For the asphalt-look roof, Walter sprinkled sand on still-wet spar varnish. After it dried, he sprayed it with black exterior enamel. Inside the 15″×23″×16″ "home" Walter installed a standard U.S. Postal Service-approved mailbox and attached its door plate to the hinged front of his custom model.

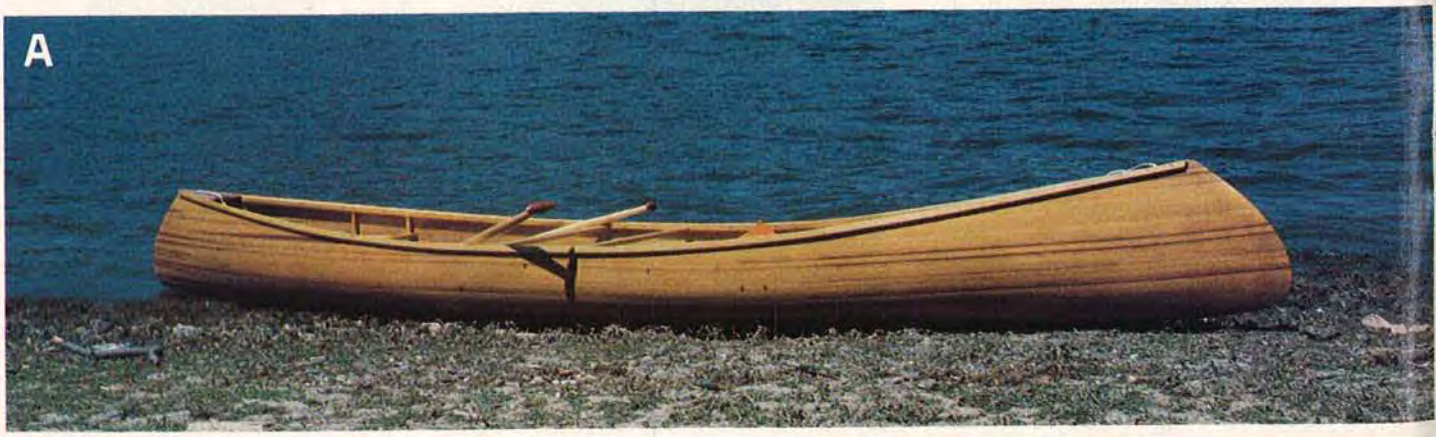
C. Authentic oak icebox

Did you know that white oak was the traditional wood for iceboxes because it withstood dampness without warping? That's why Allan Kruger of New Port Richey, Florida, chose it for his reproduction. In his 32″×16″×40″ high version, Allan used ¾″ oak stock, resawn to ¼″ for front, back, and side panels. Allan used a multitude of joining techniques—mortise and tenons, dowels, and blind dadoes. The warm finish on his turn-of-the-century vintage piece comes from a golden stain, followed by a coat of polyurethane rubbed out with steel wool and wax. Solid brass hardware adds its accent. Allan's icebox



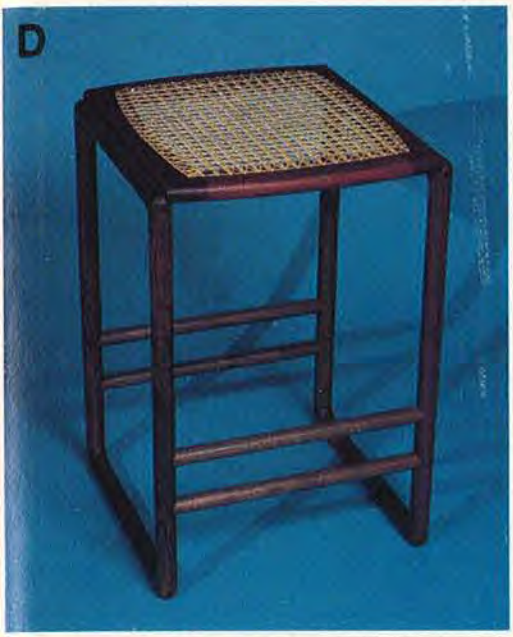
B

C



A

SHOWCASE



now serves as a distinctive dining room liquor cabinet.

D. Routed-to-round stool

No lathe work? We didn't believe it either when we looked at this photograph. But not having a lathe doesn't mean you can't make things round. That's what Patrick Warner of Escondido, California, tells students in his router workshops. To prove the point, Patrick made this 30″ stool from square stock, using only a router for shaping. The side assemblies are joined by exposed dowel-end tenons. Corners are radiused with consecutive router cutters—a rabbet, a flush trimmer, and a round-over. Walnut rungs were routed with a ½″-radius round-over cutter. Patrick joined the padauk-framed seat to the legs with mortise-and-tenon joints and finished the project with Danish oil. We're convinced!

E. Basswood mountain man

All hair, fur, and leather, Dave Rushlo's basswood figure of an early 1800s mountain man seems to glare at passersby from his base. Dave writes us from his home in Scottsdale, Arizona, that the 17″ statue was carved in three pieces—the figure, the base, and the Hawken rifle. "Mountain Man" was colored with Carver Tripps Oil Stain, then sealed with thin satin finish. Dave's figures from western history have won local and national awards. Some of his work even graces the Pro Rodeo Museum in Colorado Springs. Keep those wood chips flying, Dave!

F. Framing a family photograph

Robert Lancaster of Simpsonville, South Carolina, is a good son-in-law as well as a woodworker. So when his mother-in-law needed a suitable frame for a treasured photograph, she turned to him for help. Bob had been woodworking less than a year when the request came. By combining several designs, he found the one that seemed just right. He enhanced what he calls "simple" pine with duplicate turnings (his first ever), routed ornamentation, and a cherry stain. The 18″ × 24″ × ½″ frame was finished with four coats of Danish oil and polyurethane mixed fifty-fifty. We sure hope Robert's mother-in-law knows what a good thing she's got going, and that Robert doesn't get swamped with more requests. ■

To submit your projects . . .
Send a 35-mm color slide, with the project as the focal point and a simple background—no people. Include a capsule description—materials, special joinery, finish, and dimensions, for example. *WOOD* will pay $25 for published projects. Slides cannot be returned unless you enclose a self-addressed, stamped envelope. *Send to:*

Project Showcase
Better Homes & Gardens®
WOOD Magazine
Locust at 17th
Des Moines, IA 50336

Print this article

Seat six in style!

REDWOOD PATIO TABLE

Our one-of-a-kind hexagonal table design includes six sturdy benches that hide away when not in use.

Around the *WOOD* workshop, we came to call this our "hex" table for its six-sided seating arrangement—and because it's a real charmer. We selected redwood to withstand the sun and rain, and for its beautiful wood tones (which we preserved with a clear wood finish). Don't let all the angle-cutting scare you off—you can do all the top and bench pieces using just a few settings on your saw.

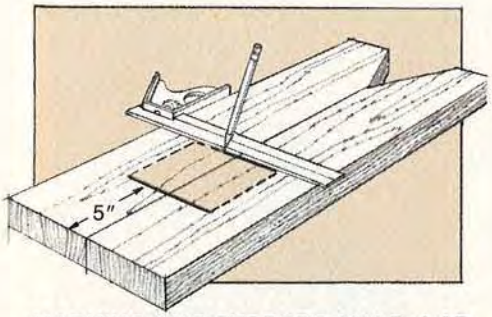
Building the table

Note: Rip ¼" from each edge of all 2×6 stock for a 5" finished width. (This removes the factory-rounded edges and lets you make tighter-fitting, better-looking joints.)

1 Cut table leg parts A and B to length. Cut the 45° chamfer on one end of each A as shown in the Table Leg Drawing.

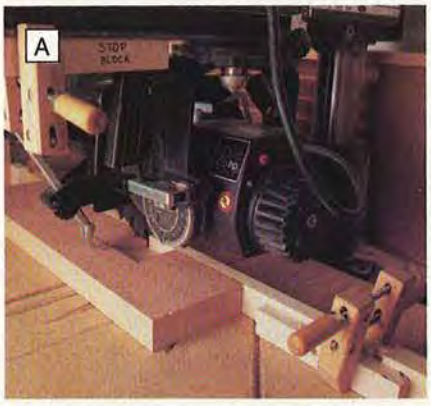
2 To cut the half-lap joints in leg parts B, start by fitting your saw with a dado blade. Now raise the blade to half the thickness of the redwood stock you are using. Test the depth of cut on scrap of the same thickness as B. Set a stop on the fence 2½" from the blade and cut the half-lap joints on each end of B.

3 Lay out and mark the stopped half-lap joints on A, 5" in from the squared end as shown in the drawing below. We marked the joints in pairs (one top part A and one base part A) for ease and uniformity.



MARKING THE STOPPED HALF-LAP

4 With your blade still set at the height used to cut the half-lap joints, set a stop on your saw so that a 2½" notch is cut into one



side of A. (As shown in photo A, we clamped a stop to the carriage

Instructions continue on page 52

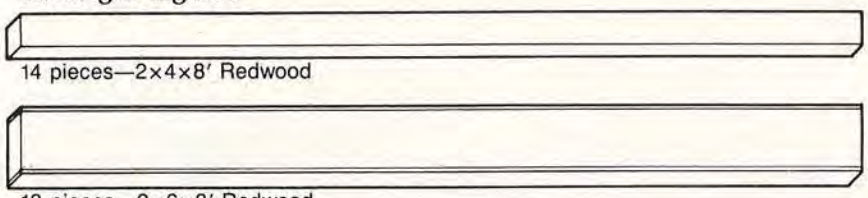
Bill of Materials

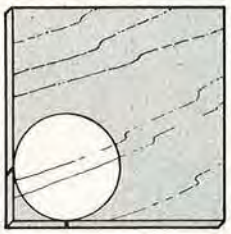
Part	Finished Size*			Material	Qty.
	T	W	L		
A	1⅝"	5"	30⅛"	redwood	12
B	1⅝"	5"	25"	redwood	6
C	2¾"	3¼"	5"	redwood	2
D	1⅝"	3½"	30⅛"	redwood	6
E	1⅝"	4⅝"	10⅛"	redwood	6
F	1⅝"	3½"	25⅞"	redwood	6
G	1⅝"	3½"	21½"	redwood	6
H	1⅝"	3½"	17⅛"	redwood	6
I	1⅝"	3½"	12⅞"	redwood	6
J	1⅝"	3½"	8½"	redwood	6
K	1⅝"	3½"	4⅛"	redwood	6
L	¾"	12½" diam.		ext. plywood	1
M	1⅝"	5"	12⅞"	redwood	24
N	1⅝"	5"	16"	redwood	12
O*	1⅝"	3½"	17⅜"	redwood	6
P	1⅝"	3½"	16⅝"	redwood	6
Q	1⅝"	3½"	21"	redwood	6
R	1⅝"	3½"	25⅜"	redwood	6

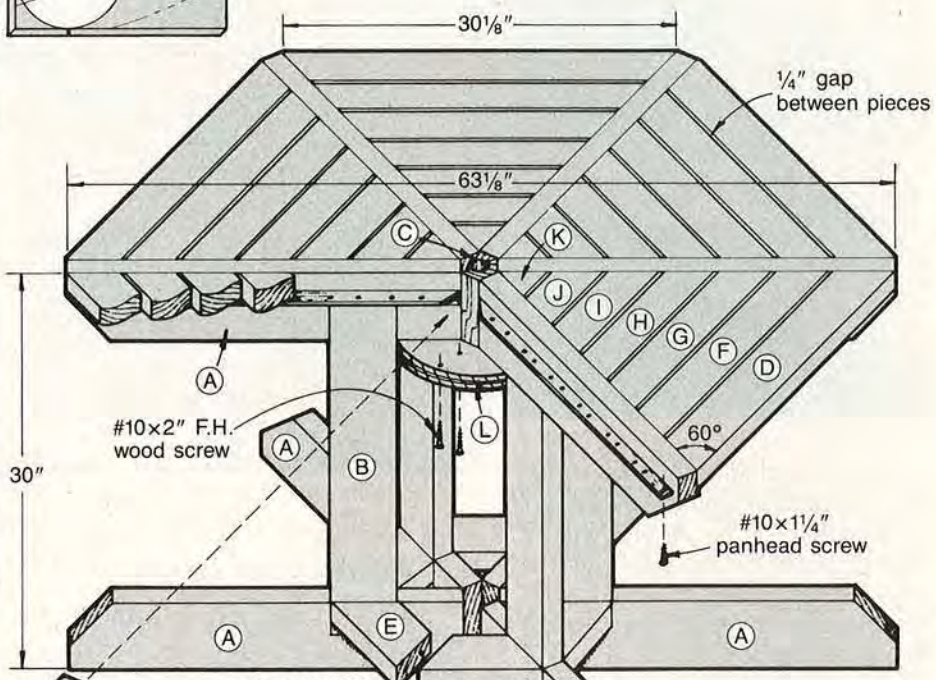
*Some parts are cut larger initially, then trimmed to finished size. Please read the instructions before cutting.

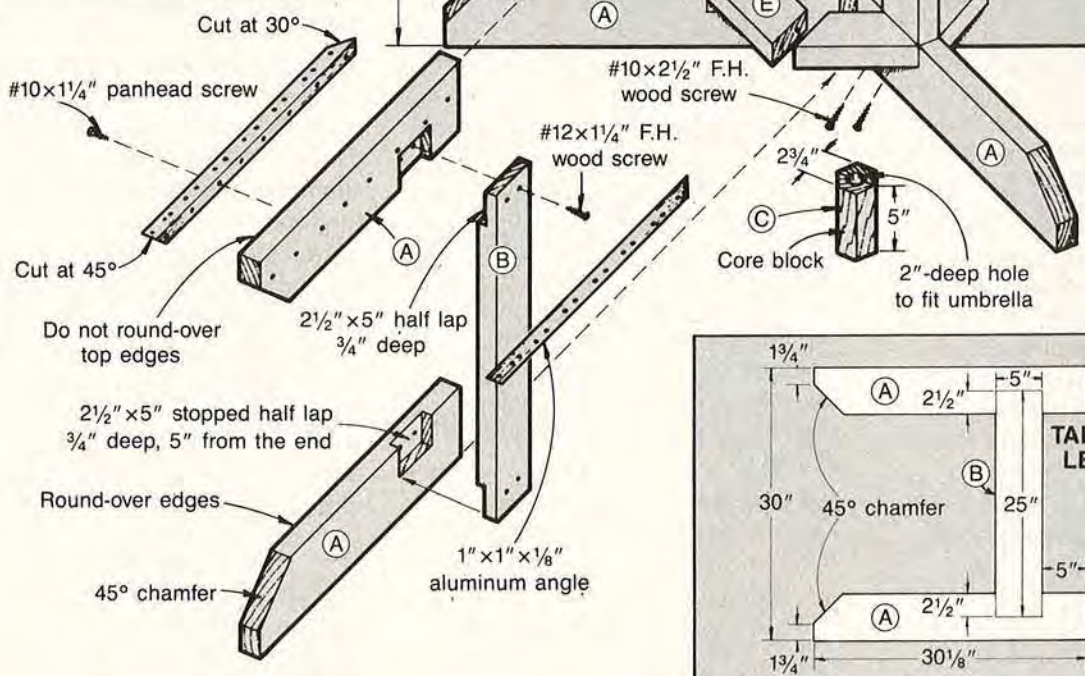
Supplies: epoxy, #12×1¼" flathead wood screws, #10×1¼" panhead sheet metal screws, #8×2½" flathead wood screws, #10×2" flathead wood screws, #10×3" flathead wood screws, (Note: use all stainless steel screws for this project if available), 6—6' pieces of 1×1×⅛" aluminum angle (manufactured by Macklanburg-Duncan and available at most hardware stores), clear exterior finish

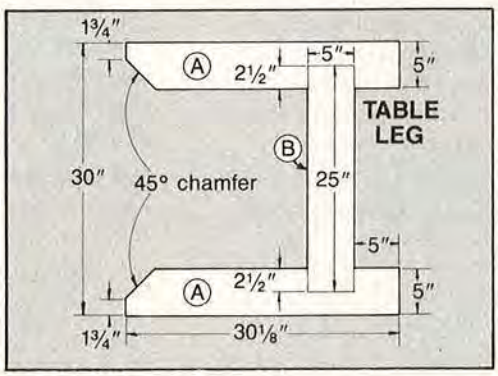
Cutting Diagram







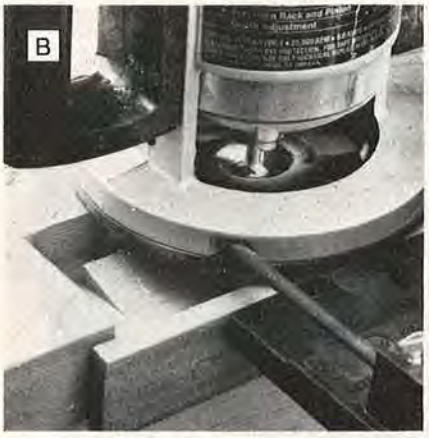




Continued

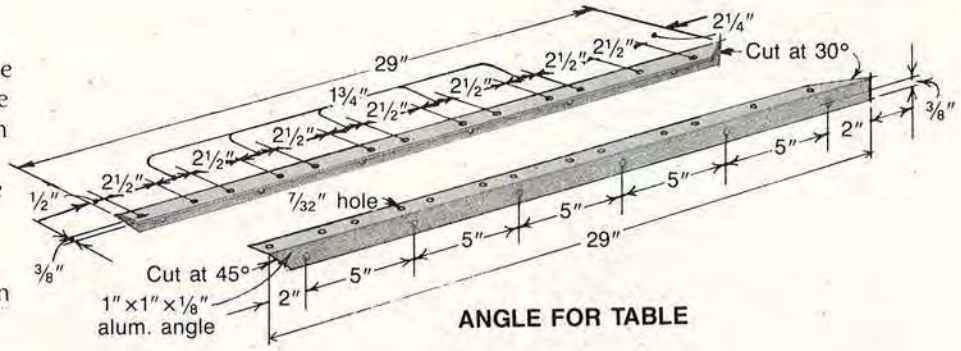
of our radial arm saw to cut the stopped half-lap joints. You also could use a router and jig to cut the dado.) Now set a stop on the fence and cut the stopped half-lap joint in six As, then move the stop on the fence to the other side of the blade and cut the remaining six As.

5 Using a router fitted with a straight bit and an edge guide, clean out the stopped half-lap joints as shown in photo B. (We set the edge guide so the straight bit would

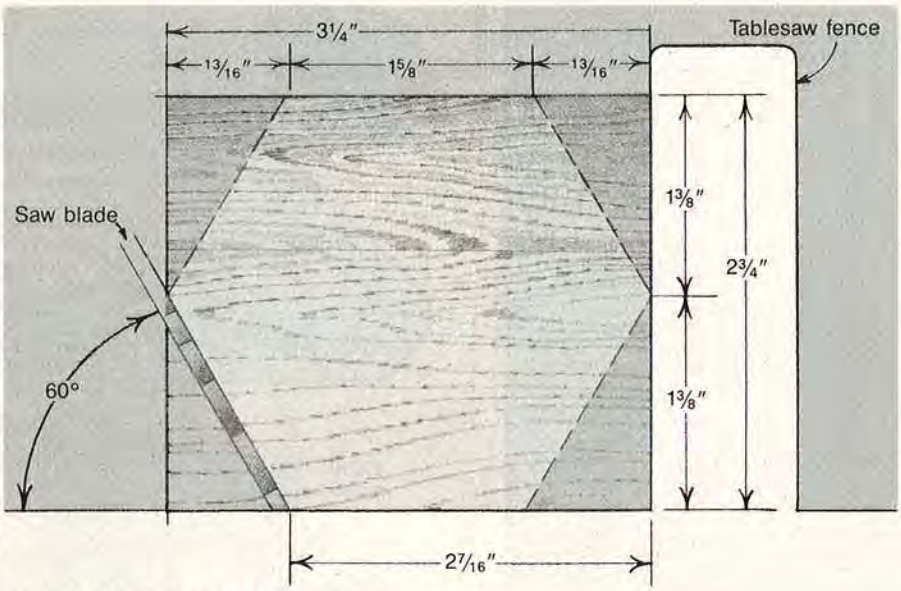


not cut more than 2½" in from the edge. While the guide prevents you from cutting too far in, you will need to clamp on stops for the side cuts—or just eyeball it. You can use this same routing process to cut the entire stopped half lap if you don't want to use the radial arm saw.) Clean out the two rounded corners of each recess with a mallet and chisel. Check the fit of the half-lap joint of each B into the stopped half-lap joint of each A.

6 Mix the epoxy and brush it onto the mating surfaces of two As and one B. (When brushing epoxy onto the end grain, we applied a first coat, then did the second coat just before clamping and screwing to ensure adequate adhesion.) Clamp two As to each B and check for square. Countersink and install two #12×1¼" wood screws into each half-lap joint. The head of the screw should rest just below the surface of the redwood to avoid hitting it when sanding later. Set the assembly aside to dry and make five more legs in the same manner.



ANGLE FOR TABLE



CUTTING THE CORE BLOCK

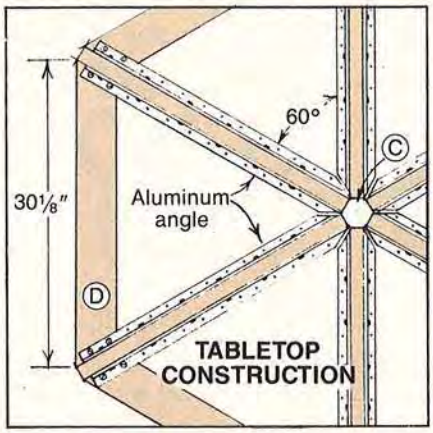
7 Sand each assembly smooth with 80-grit paper and use a ¼" round-over bit to rout all the edges except the top edge of the top A.

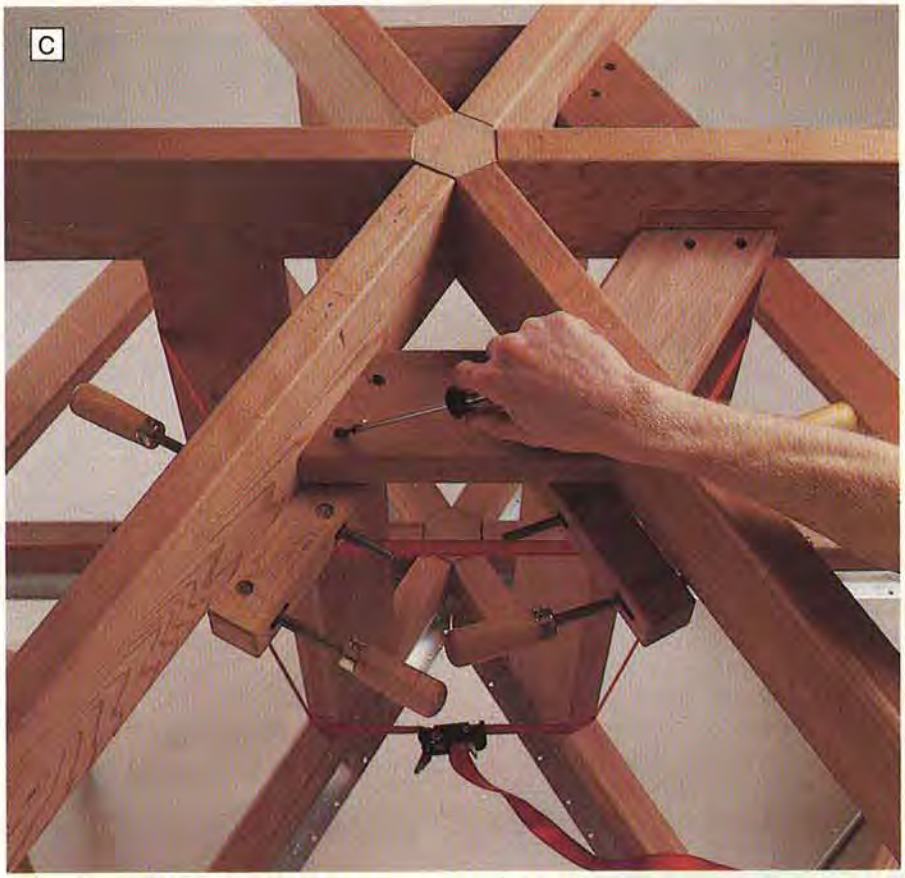
8 With a hacksaw, cut 12 pieces of 1×1×⅛" aluminum angle to 29". Cut the ends of six pieces at 30°, then cut the ends of the other six at 30°, as shown in the Angle for Table Drawing. The pieces join at a 60° angle when later mounted to the bottom side of the tabletop. Chamfer the outer ends at 45° in the same manner, to match the chamfer profile on the outside ends of part A.

9 Clamp the aluminum pieces together and lay out the screw holes as dimensioned in the Angle for Table Drawing. Drill two 7/32" holes through the angle for each 2×4. Now drill six 7/32" holes in each 2×4 to mount the angle to part A of the A/B assembly. File or sand all sharp edges and burrs from the angle pieces.

10 Using #10×1¼" panhead sheet metal screws, fasten the aluminum supports to both sides of all As. (Use a 2×4 scrap to position the aluminum the thickness of D below the top edge.)

11 Construct each core block (C) by cutting and laminating with epoxy two 12" pieces of 2×4. After the epoxy dries, cut the block to 3¼"×2¾" as dimensioned in the drawing below. Now, tilt the blade at 60° and set the fence 2 7/16" away from the base of the blade as illustrated in Cutting the Core Block Drawing above. Crosscut the two 5" C blocks from the 12" lamination. If you plan to outfit the table with an umbrella, bore a hole completely through the center of the top block and 2" deep into the base block.





Assembling the base

1 Working on a large, flat surface, set all six leg assemblies upside down to form a rough hexagon. Set one core block in the center of the legs. Use a band clamp to position and align the legs around the block. Repeat this with the other block.

2 Set your saw to cut a 60° angle and cut one lineal piece of scrap into six equal lengths and form a hexagon with the pieces to verify the angle. Miter all six Ds at 60° to finished length and position them as shown in the Tabletop Construction Drawing below. Slide the pieces under the aluminum and check that they true up the hexagon snugly; trim if necessary. Using #10×1¼" panhead screws, fasten each D to the aluminum angle on the A/B assembly.

3 Miter parts E to finished length. Then clamp hand screws to B to hold each flush with the top of A, drill pilot holes, and "toe-screw" each E to the A/B assembly as shown in photo C.

4 Toe-screw the base core block (C) in place (drive the screws at an angle from the bottom edge of A into the core block).

5 With a helper, turn the table right side up and miter-cut one each of F, G, H, I, J, and K to finished length. Set the pieces into position on the aluminum angle and check for a good fit at the ends and for the ¼" gap between pieces. (We ripped scrap stock to ¼", then cross-cut to 2" to form the spacers. Then we positioned the tabletop pieces in one of the hexagonal sections with the spacers in place for consistent spacing.) Then miter-cut the rest of the tabletop pieces to the same lengths.

6 Fasten the tabletop pieces (F, G, H, I, J, K) to the aluminum angle, starting with F and working in. Using scrap spacers or by measuring, be careful to keep a consistent ¼" gap between the pieces.

7 Cut a 12½" diameter disk (L) from ¾" exterior plywood to fit between the legs for additional stability in the base. Waterproof L with a coat of epoxy and position it while the epoxy is still wet. (Brushing on a coat of epoxy is a quick and simple method of sealing the plywood). Fasten L to the bottom of the tabletop center with #10×2" wood screws. Now epoxy the upper hexagonal block C in place and, using it as a guide, bore a hole through the plywood for the umbrella.

8 Sand the entire table assembly smooth with 100-grit paper. Remember that people will come in contact with table and bench surfaces, so be extra careful to sand any sharp edges remaining on these pieces. (We had a few gouges that we filled with a mixture of FIX Wood Patch and cherry stain to match the redwood. We belt-sanded any rough spots with 80-grit paper, then finish-sanded with a pad sander and 100-grit paper.)

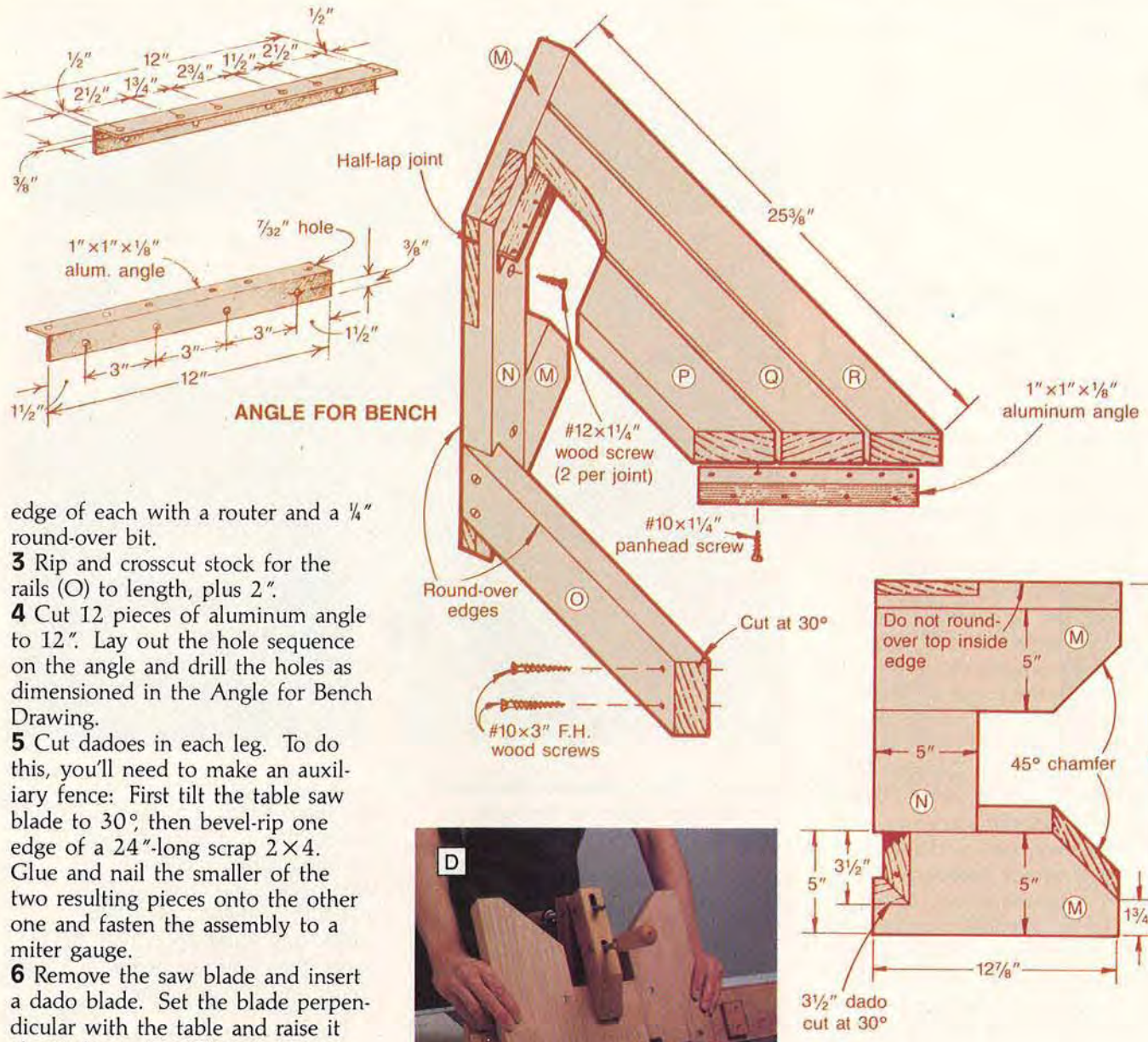
Building the benches

> **Note:** Many of the construction techniques used in building the table are repeated in the benches. Refer back if necessary.

1 Lay out and cut the half-lap joints in M and N. Chamfer the outside end of the M pieces to match those of the table legs.

2 Epoxy and screw the bench supports together, positioning the screws so that they are not in the path of the dado to be cut in step 6. After the epoxy dries, sand the assembly smooth with 80-grit paper. Then round-over all edges of the assembly *except* the top inside

Continued



edge of each with a router and a ¼" round-over bit.

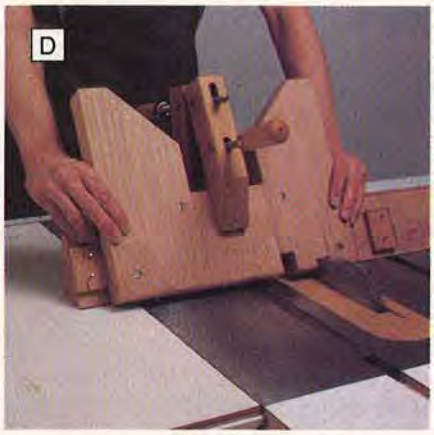
3 Rip and crosscut stock for the rails (O) to length, plus 2".

4 Cut 12 pieces of aluminum angle to 12". Lay out the hole sequence on the angle and drill the holes as dimensioned in the Angle for Bench Drawing.

5 Cut dadoes in each leg. To do this, you'll need to make an auxiliary fence: First tilt the table saw blade to 30°, then bevel-rip one edge of a 24"-long scrap 2×4. Glue and nail the smaller of the two resulting pieces onto the other one and fasten the assembly to a miter gauge.

6 Remove the saw blade and insert a dado blade. Set the blade perpendicular with the table and raise it above the surface of the table the thickness of O. Mark the location of the dadoes in the M/N assemblies. Position one assembly against the auxiliary miter gauge fence with the inside of the assembly facing out. Nail stops to each end of the miter gauge fence to ensure a finished dado 3½" wide, then cut six of the dadoes to size as shown in photo D, making sure the screws are not in the path of the cut. Now remove the fence from the miter gauge and move it to the slot on the other side of the blade. Reposition and reattach the fence to cut the other six dadoes.

7 Attach the angle to the M/N assemblies.



8 Miter-cut bench parts P, Q, and R to size and fasten to the aluminum angle.

9 Epoxy and screw O into the dado using two #10×3" wood screws at each joint. After the epoxy dries, use a hand saw to trim the ends of O flush with the outside edge of the leg assembly.

10 File or sand all sharp edges and burrs from the aluminum, then sand the benches smooth.

Finishing

1 Apply redwood exterior finish to the table and benches. (We applied several applications of CWF Clear Wood Finish, a penetrating oil. It's made with Penetrol by the Flood Company and is available at many local lumberyards and paint stores. CWF should be renewed about every six months. For more about outdoor finishes, refer to the June, 1985 issue of *WOOD*.) ■

Design: James Downing
Produced by: Marlen Kemmet
Photographs: Hopkins Associates
Illustrations: Bill Zaun; Randall Foshee

SHOULD YOU BE USING HARDWOOD PLYWOOD?

Perhaps confusion about the quality, grading, and types of hardwood plywood has kept you from using it. If that's the case, you're unnecessarily limiting the scope of your woodworking projects. Here's advice about the pros and cons of working with this unique material.

As early as 3000 B.C., Egyptians bonded thin layers of fine exotic hardwoods to commonplace cores, then worked this ancient version of hardwood plywood into furniture. Their primary purpose in using it was to conserve the hard-to-get exotic woods the pharoah and other wealthy customers demanded in their furnishings.

Today's material, while it still conserves fine hardwoods, has other attributes that make it ideal for cabinet doors, sides, and tops; bookshelves; drawer bottoms; and other relatively large surfaces.

Why use hardwood plywood?
Hardwood plywood usually costs more than the equal quantity of solid hardwood, but it can be worth the premium. Among the advantages are:

• *Dimensional stability.* Crossbanded layers (see illustration, right) and balanced construction mean that hardwood plywood won't shrink, swell, or warp as much as lumber. Its thin plies, lying at right angles to each other, as well as the various core materials available (see table on page 56), produce uniform strength both with and across the grain.

Baltic birch, a widely distributed product from the Soviet Union and Scandinavia, has even better strength. All of the plies in this veneer-core product (and there are as many as two more per thickness than other plywoods) are rotary-cut birch and without gaps or voids. In 60" square panels, Baltic birch comes in metric thicknesses approximating ¼", ⅜", ½", ⅝", and ¾".

• *Variety in thicknesses.* Sheets in ⅛", ¼", ⅜", ½", and ¾" thicknesses eliminate planing and waste.

• *Large panels.* Full 4×8 sheets allow you to work large pieces without edge-joining or otherwise making up width.

• *Color-matched appearance.* In premium grades, at least one side will be uniform in color and grain, making staining and finishing easier.

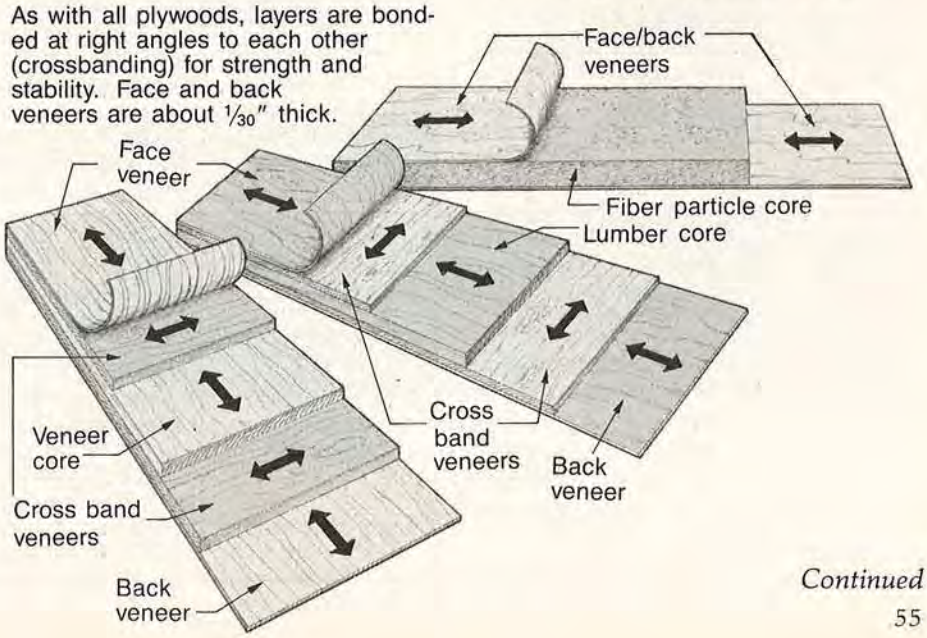
There are some drawbacks
Hardwood plywood does have its limitations. Keep these factors in mind so you can make the best choice:

• *Cost.* Compared to solid stock on a board foot basis, hardwood plywood definitely is more expensive.

To compute the approximate board foot cost of any panel, first figure the number of board feet it equals. Use the formula *thickness* × *width* × *length* (all in inches) *divided by 144.* If you worked the formula on a piece of ¾"×48"×96" flat-sliced red oak plywood, you'd find it equals 24 board feet. If the panel cost $67, you'd divide $67 by 24 for a board foot cost of $2.79. Now compare that to the board foot price of the best quality First and Second 1" plain-sawn solid red oak, which, let's say, is $2.31 (1" in hardwood grading is the closest you'll come to ¾"-thick stock).

In the above example, you'd pay 48 cents more per board foot for hardwood plywood. With its performance and working advantages, plywood at this price makes a good choice. But what if the price difference was $1 or more?

• *Limited selection.* Since dealers stock what's in demand, your supplier may only have three or four types of hardwood plywood, such as the popular oaks, birch, and mahogany. You may be able to special-order other types of hardwood veneers, but you'll still be limited to a dozen or so of the

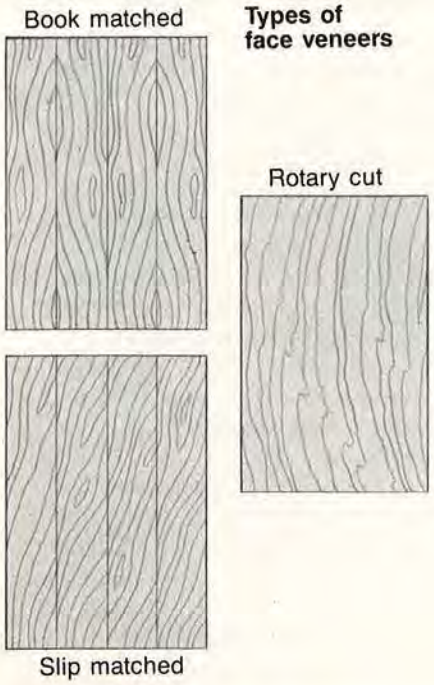

As with all plywoods, layers are bonded at right angles to each other (crossbanding) for strength and stability. Face and back veneers are about 1/30" thick.
Face/back veneers
Face veneer
Fiber particle core
Lumber core
Cross band veneers
Back veneer
Veneer core
Cross band veneers
Back veneer

Continued

most common, and no exotic woods. You might approach your project by first determining the type of hardwood plywood available, *then* selecting the compatible solid stock. This advice also applies to the thin, solid wood edging strips applied where the panel's edge otherwise would show. It's not often carried in more than a half dozen hardwood species.

• *Unreliable stated thickness.* The tendency for hardwood plywood panels to vary in thickness from their stated dimension can be frustrating. If you buy a ¾"-thick panel, for instance, it may stray 1/64" to 1/32" from that thickness. This often is due to the foreign origin of much of this material and the resulting metric thickness measurement, particularly in ash and birch plywood (50 percent or more comes from Taiwan, Japan, and Indonesia). But even among U.S. manufacturers, thickness may vary slightly from batch to batch and mill to mill. You can adjust your measurements, jigs, and cuts to compensate for the variance, but be sure to buy all hardwood plywood for the same project at one time to save resetting.

• *Thin face veneers.* U.S.-made hardwood plywood has face veneers averaging 1/30" in thickness. Some species, such as black walnut, are sliced thinner, to 1/32". Foreign veneers are thinner still and can be tough to saw without splintering and sand without destroying.



What are the veneer choices? Veneers, which are nothing more than scant slices off a log, vary in appearance because of the methods by which they're removed. Oak, birch, ash, and other plentiful species lend themselves to peeling by a large lathe, a process very similar to spinning paper towels from a roll. As with softwood plywood, these *rotary-cut*, continuous slices usually cover a sheet in one piece, producing an erratic grain pattern. Because of this simplified slicing procedure and the elimination of matching and other hand work, rotary-cut veneers cost less.

Flat-sliced veneers come off the log one flitch, or cut, at a time—just as a potato passes through a vegetable slicer. A surface covered with flat-sliced veneer—and almost all common hardwoods are available this way—resembles a series of glued-up boards. This type of veneer is moderately expensive.

Once veneers (other than rotary-cut) have been removed from the

HARDWOOD PLYWOOD CORES

Core type	Plies per thickness	How it fastens	How it machines	Comments
Lumber	(5/8" to ¾") 5 plies	Similar to solid wood. Holds screws and nails well. Requires pilot holes.	Same as solid stock for sawing, edge-forming. Edges can be left exposed.	Expensive, but works most like solid wood. Core pieces run in longest dimension. Can warp across width. Often has hardwood core.
Veneer	(1/8" to ¾") 3 to 7 plies	Screws and nails hold solidly in front and back. Edges have little holding power and require pilot holes.	Saws well, but core may splinter. Impossible to shape without edge-banding. Requires edge tape.	Provides most strength. Good for all-around use. Fir plies often have voids. Large expanses can warp slightly.
Particle	(¾") 3 plies	Use finely threaded screws and thin nails. Edges split easily.	Very hard. Requires carbide tools. Saws well but veneer can splinter. Edges can be shaped. Core difficult to stain and finish.	Least expensive, but most stable. Heavy. Long shelves or doors will sag without support. Corners may break. Wear dust mask when working.
Fiber	(¾") 3 plies	Use fine-threaded screws, thin nails. Edges split easily.	Very hard. Needs carbide tools. Edges can be shaped. Saws relatively well. Veneer can splinter. Core hard to stain and finish, requires tape.	Heavy. Weight can sag long pieces. Corners break easily. Fine dust requires use of mask. Core uniformly fine. Stable.

log, they must be added to the plywood core. *Match* refers to their arrangement on the face and back. *Slip-matched*, the most common way of applying pieces, has consecutive flitches as they come off the log butted up side by side. *Book-matched* uses consecutive slices, too, but every other one is flipped over for a mirror image. A book-matched face resembles the right and left pages of an open book (see match illustration at left).

Understanding grading

Hardwood plywood grades, set by both the Hardwood Plywood Manufacturers Association (HPMA) and individual mills, cover varying degrees of quality from top of the line to bottom. But you only need to acquaint yourself with those described in the table. All retail outlets carrying hardwood plywood will be familiar with these designations.

While not actually part of the grading standards, the classification of hardwood plywood as either Type I or Type II becomes important to you if your project will be used outside. Most hardwood plywood has Type II adhesive, which creates a somewhat water-resistant bond. For outside applications, you'll have to order hardwood plywood bonded with Type I adhesive. This truly waterproof bond raises the cost of the panel, but for outside durability, it's essential.

Shopping tips

Smart planning and shopping pay off when you buy hardwood plywood. Follow these suggestions to get the most for your money.

HARDWOOD PLYWOOD GRADES

Grade	Veneer quality	Defects allowed
A—Premium	If sliced, pieces are slip- or book-matched for pleasing effect of color and grain. Can also be one-piece rotary-cut	Minor, but not frequent burls, pin knots, and inconspicuous small patches
1—Good[1]	Unmatched slices permitted, but no sharp contrasts in color, grain, or figure	Burls, slight color streaks, pin knots, and inconspicuous small patches in limited amounts
2—Sound	No figure, color, or grain match	Smooth patches, sound knots, and discoloration or varying color
3—Utility	Reject material	Open knots, splits, wormholes up to 1 inch; major discoloration
4—Backing	Rarely found due to unlimited defects; strength is the only gradable feature	
G1S[2]	Dealer-applied designation meaning "Good 1 Side" used primarily for foreign-origin plywood of ¼" or less thickness; face can be good to premium, back with large defects or of another hardwood species	
Shop[3]	Defects downgrade these Good or Premium panels to factory seconds	

Note: Hardwood plywood panels typically have one side of A-Premium and a lower grade on the other, such as A-1 or A-2, which are combined designations.

[1]Also referred to as Cabinet grade [2]Not an HPMA-certified grade
[3]Dealer-determined

• *Select a suitable grade.* If you're building a hutch cabinet, for example, and want to make the back of hardwood plywood, only the side that will face the room needs to be of higher quality. A typical ¼" hutch back would have a "good" grade for the face and a "backing" grade for the back. Cabinet doors, where one side is seen only occasionally, require upgrading--"good" face and a "sound" back.

• *Don't buy more than you need.* Since hardwood plywood is expensive, try to minimize leftovers from a 4×8 sheet—storing them risks gouges, scratches, and moisture damage. Often, your dealer will have half-sheets available for smaller projects. The cost will be higher, but they save money by reducing waste. Sometimes, too, you can buy "shop" grades, which can be high quality with some damage such as broken corners, at significant savings.

• *Inspect before you pay the bill.* Broken or smashed corners can't be repaired. Voids, those sunken or hollow spots in the core, won't hold fasteners. Don't accept anything with portions of the core showing slightly through the veneer (this is caused by excess sanding during manufacture). Imperfections in the ply underlying the veneer often telegraph through as a small rise or dent, and they won't sand away. Veneers also may suffer glue failure, overlap at the joints, or even have spaces between them filled with wood putty. Reject any of these imperfections.

Where can you buy hardwood plywood?

Local lumberyards may have only a limited selection, but they can special-order through their lumber wholesaler. Home centers and hardwood specialty retailers carry hardwood plywood in larger metropolitan areas. Begin shopping by checking listings under "Hardwoods & Veneers" in the Yellow Pages.

Also, school shop suppliers won't sell small amounts to individuals, but you might be able to order through the school or perhaps a local cabinetmaker. ■

Make a splash with the WOOD

Funtime Fleet

Kids love playing with floating toys in the bathtub. They'll love you, too, when you present them with either of these two terrific toy boats. If you're feeling ambitious, give the battleship a try. Or if you want to turn something out in a hurry, take on the tug.

The *U.S.S. WOOD*

1 Begin by transferring the hull patterns on page 60 to ½" graph paper. (Be sure to transfer the holes as well as the outline of the hulls.) Then, using carbon paper, transfer the hull shapes and hole locations to your pine stock (A, B, C). Cut the hull pieces to shape with a band saw or portable jigsaw.

2 Drill eight holes in hull A to accommodate the ballast nuts. Clamp A, B, and C together and drill the holes for the hull pins (D). Cut the hull pins to length. Put the ballast nuts in place, then epoxy and clamp the hull pieces (A, B, C, D) together. (The hull pins will protrude ½" above the surface of C for later mounting of the gun turrets.) Sand all surfaces smooth after the epoxy has dried.

3 Transfer the full-size patterns on page 60 to tracing paper, then use carbon paper to transfer them to pine stock. Cut the superstructure (E), the bridge (F), the launch (G, H), the turret (I), and the launch stack (J) to shape. Drill the portholes in E and F, and the gun barrel holes in I where depicted on the exploded-view drawing. (We clamped the pieces in a hand screw to hold them steady while drilling.) Now, bore a ½" hole in the bottom of the turret for later mounting onto part D. Glue E in place on the hull and when the glue dries, mark and drill all the holes in both E and F as the patterns indicate.

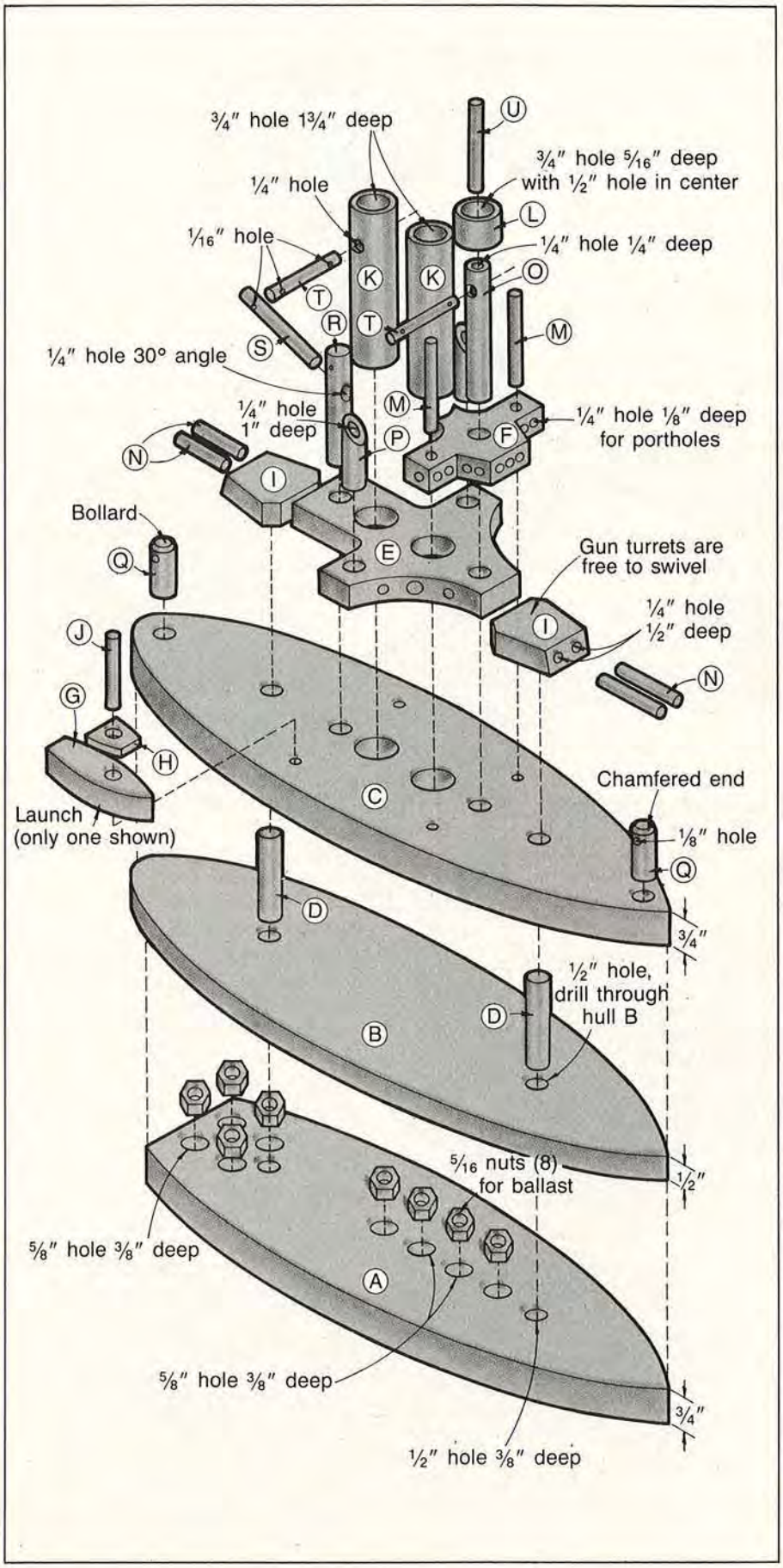
4 Epoxy launch parts G and H together, position them on the hull and drill the hole for J through the launch and into the hull. Epoxy the launches to the hull.

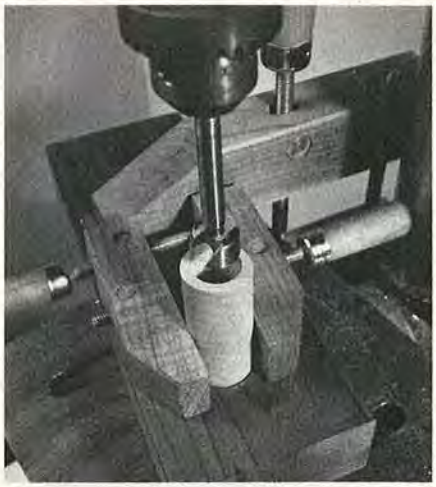
5 Cut the smokestacks (K) to length. Clamp a piece of scrap wood to your drill press table and bore a 1" hole 1" deep in it. Without moving the jig, insert K into the hole and clamp it to prevent it from turning with the bit, switch to a ¾" bit and bore a hole 1¾" deep in the end of each K as shown in the photo on page 59.

To make the crow's nest (L), insert a 1"-diameter dowel that's 1½" long in the jig and bore a ¾" hole 5/16" deep. Without moving the dowel or jig, switch to a ½" bit and bore a hole through the center of the ¾" hole all the way through the remaining stock. Hand-cut the top ⅝" off the dowel.

6 Cut the bridge supports (M), barrels (N), mast (O), air ducts (P), bollards (Q), crane shaft (R), crane

Instructions continued on page 80





Fashion a jig with hand screws and scrap wood drilled with a 1" hole. Use it to secure the 1" dowels while you bore out the centers for smokestacks with a flat-bottomed bit, as shown above.

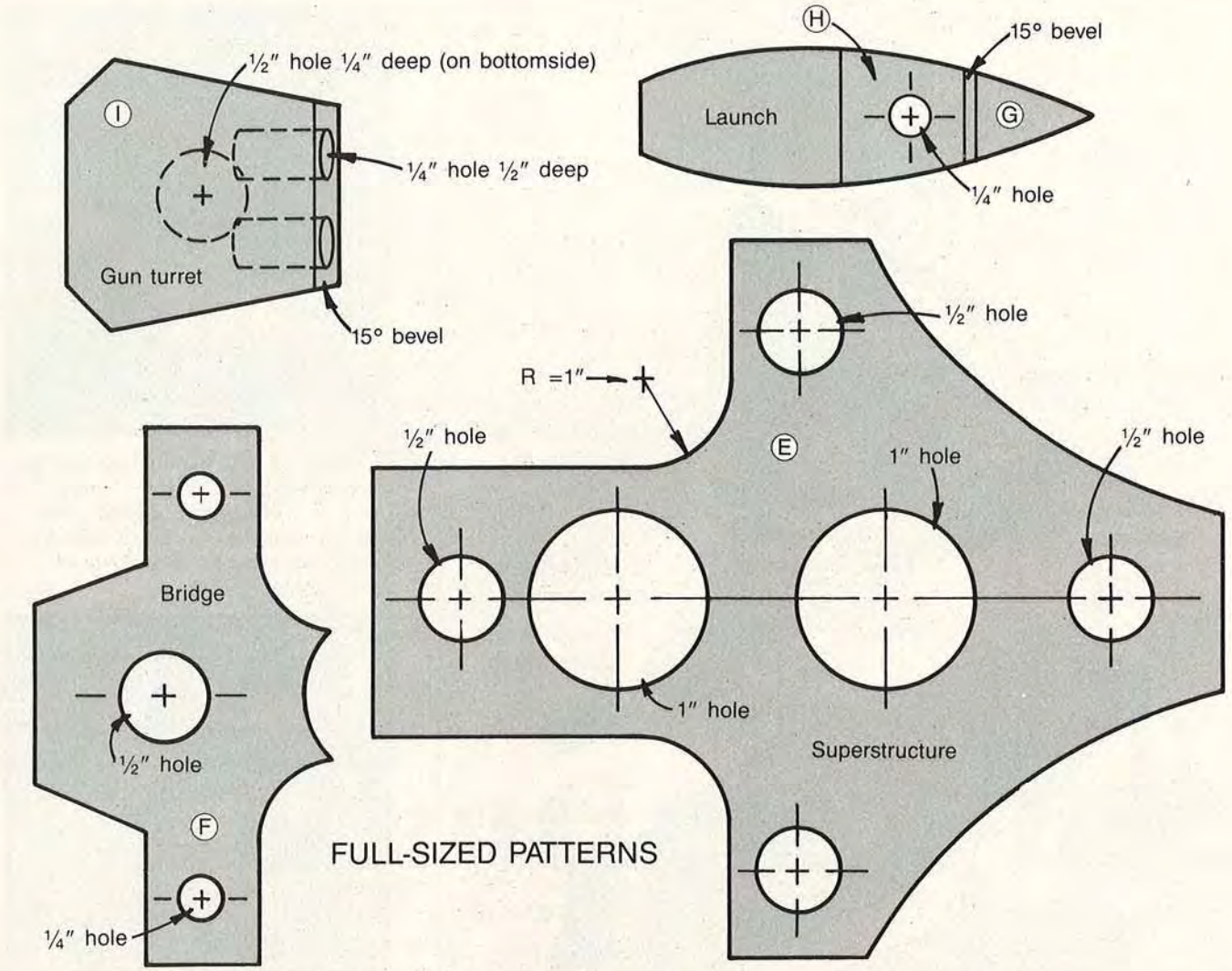
Bill of Materials

Part	Finished Size*			Material	Qty.
	T	W	L		
A	¾"	4"	12½"	pine	1
B	½"	4"	14"	pine	1
C	¾"	4"	14"	pine	1
D	½" diam.		2⅛"	dowel	2
E	½"	4"	4¾"	pine	1
F	½"	1⅝"	3"	pine	1
G	½"	¾"	2½"	pine	2
H	3/16"	¾"	¾"	pine	2
I	½"	1½"	1½"	pine	2
J	¼" diam.		1⅞"	dowel	2
K	1" diam.		3½"	dowel	2
L*	1" diam.		⅝"	dowel	1
M	¼" diam.		2⅝"	dowel	2
N	¼" diam.		1½"	dowel	4
O	½" diam.		3"	dowel	1
P	½" diam.		1¾"	dowel	2
Q	½" diam.		1"	dowel	2
R	½" diam.		2¾"	dowel	1
S	¼" diam.		2¼"	dowel	1
T	¼" diam.		1¾"	dowel	2
U	¼" diam.		2"	dowel	1

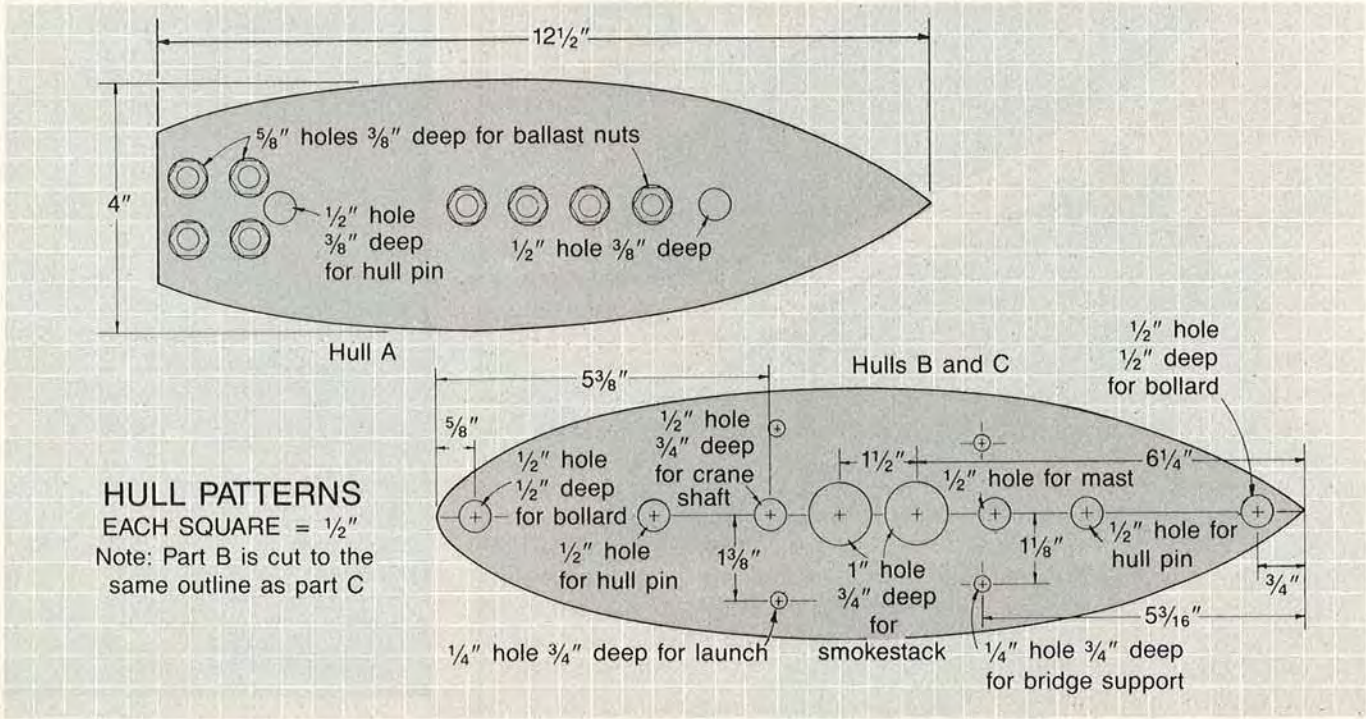
*Some parts are cut larger initially, then trimmed to finished size. Please read instructions before cutting.

Supplies: epoxy or resorcinol (waterproof glues), oil-based enamel paints (rust, gray, black), 8—5/16" nuts

Continued



FULL-SIZED PATTERNS



HULL PATTERNS

EACH SQUARE = ½"

Note: Part B is cut to the same outline as part C

The mighty Tug-a-Tug

1 Rip, then crosscut the hull sections (A, B, C) to the sizes listed in the Bill of Materials. Copy the patterns for A and B (shown on the grid portion of the exploded-view drawing) on 1" grid paper, then use carbon paper to transfer the patterns to the pine stock. Use the pattern for B to trace the outline for part C.

2 Rough-cut parts A, B, and C to shape. Finish-sand the stern (rear section) of A and B, and the inside of the gunwale (C).

3 To distribute the weight evenly and ensure that the tug will float level, bore 2" holes ½" deep and 2" apart on the top of hull section A and the bottom of the hull section B. Then bore out the remaining wood between the two holes and smooth out the rough edges with a chisel to form mirror-image cavities in both the top of A and the bottom of B. Now bore two 1¼" holes through the top of B into the cavity for the pilothouse and smokestack.

4 Drill two ⅝" holes ⅝" deep in the bottom of A to house the four 5/16" nuts used as ballast. Space the holes 1" apart so you won't hit the nuts when you drill the hole for the bollard. Test-fit the nuts in the holes and epoxy them in place. Now drill a ⅜" hole ¼" deep in the stern of the A deck to house the bollard (I).

5 Mark the location of the four portholes on the stern of the B deck. Clamp B in a vise or a hand screw and drill ⅜" portholes ⅛" deep. Using epoxy, which is waterproof, glue and clamp A, B, and C together.

6 With a belt sander, sand the bow (front end) of the tug to 15° as shown in the Side View Drawing at right, contour-sand the sides, and sand the gunwale (C) so that it tapers from ¾" thick in the front to ⅜" in the back.

7 Cut the pilothouse (D) and smokestack (E) to size from 1¼" dowel stock. Using a wooden V-block to keep the pilothouse dowel in position, drill a ¾" hole ⅝" down from the top end of the dowel for the windows. Now fashion a smokestack drilling jig like the one shown in the how-to photo on page 59. Use the jig to centerbore a 1" hole 2½" deep in the smokestack, and a 1" hole 1⅞" deep in the pilothouse.

8 Glue and install the pilothouse and smokestack a ¼" into the B deck.

9 Cut the roof (F) and the whistle pieces (G, H) to size. Cut the bollard (I) to size plus 1" and J to size. Drill a ⅜" hole through the center of the roof for the whistle and glue the roof to the pilothouse. Cut the notch with a fine toothed saw and chamfer the top end of whistle piece G. Drill a ⅛" hole for H in G at a 45° angle and glue H in place. Now, glue the whistle to the roof, and the roof to the pilothouse.

10 Drill a 3/16" hole through the bollard (I). Chamfer the top end of I and glue J in place.

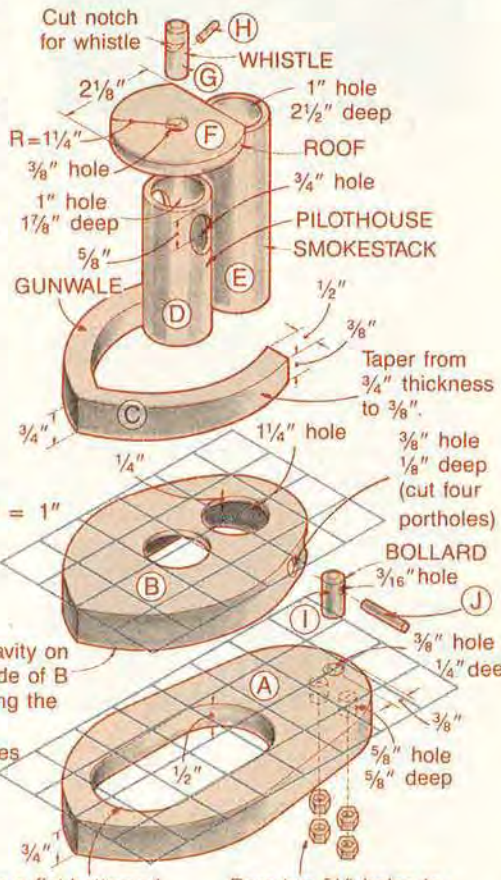
11 Finish-sand and apply several coats of exterior polyurethane. ■

Bill of Materials

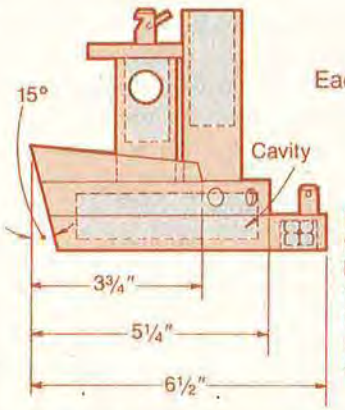
Part	Finished Size* T	W	L	Material	Qty.
A*	¾"	3½"	6½"	pine	1
B*	¾"	3½"	5¼"	pine	1
C*	¾"	3½"	3¾"	pine	1
D	1¼" diam.		2⅛"	birch dwl.	1
E	1¼" diam.		2¾"	birch dwl.	1
F*	¼"	2½"	2⅛"	pine	1
G	⅜" diam.		1"	birch dwl.	1
H	⅛" diam.		⅝"	birch dwl.	1
I*	⅜" diam.		1¼"	birch dwl.	1
J	3/16" diam.		1"	birch dwl.	1

*Some parts are cut larger initially, then trimmed to finished size. Please read instructions before cutting.

Supplies: epoxy, exterior polyurethane, 4—5/16" nuts (for ballast)



SIDE VIEW



Note: Use epoxy throughout.

Epoxy all three decks together before sanding bow to 15°.

Print this article

SIX HANDY HELPERS
for your table saw

With a little help from these table saw accessories, you can greatly increase the accuracy and versatility of your workshop workhorse.

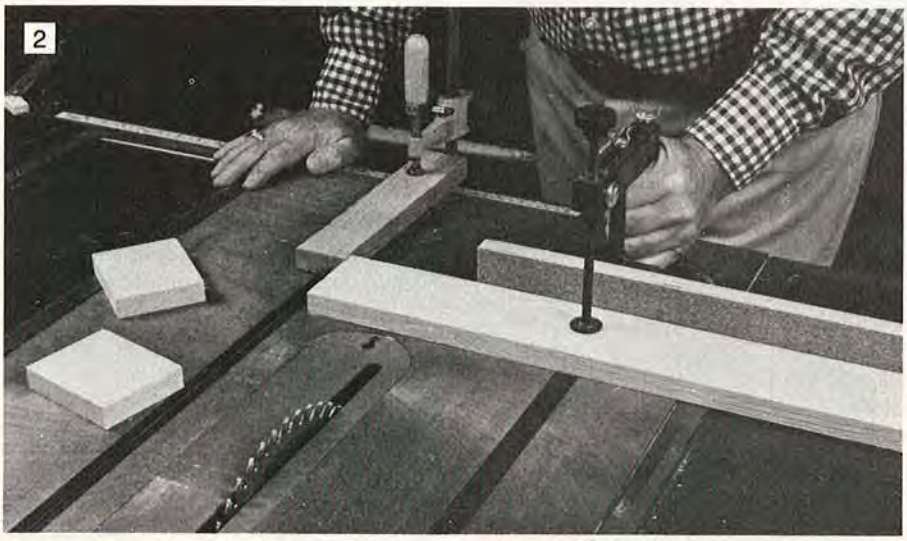
Miter gauge extension

This is an oldie but a goodie that you ought to make if you haven't already—see photo 1. Just screw a strip of wood about the same width as your gauge is high to the face of the miter gauge. Most gauges have some holes already drilled for screwing on this simple but nifty

accessory. Be sure to attach it so it will clear the blade guard. It can stick out the other side as far as you want.

Glue a strip of sandpaper (we used a piece cut from a sanding belt) to the face of the extension with contact cement to help keep the work from creeping as you pass it through the saw. Teamed up with a hold-down on the miter gauge, you're practically guaranteed a no-slip crosscut, even with those tricky miters.

While you're at it, make a simple, no-nonsense stop block like the one shown clipped to the end of the miter gauge extension. Drill a hole for a small screw through the corner of a spring clamp, then attach a short block of wood. When you screw the block to the clamp, leave it a bit loose so the block will self-align with the end of the workpiece when you clamp it on. P.S.—this stop block works like a charm on the fence of a radial arm saw, too.



Cutoff for short blocks

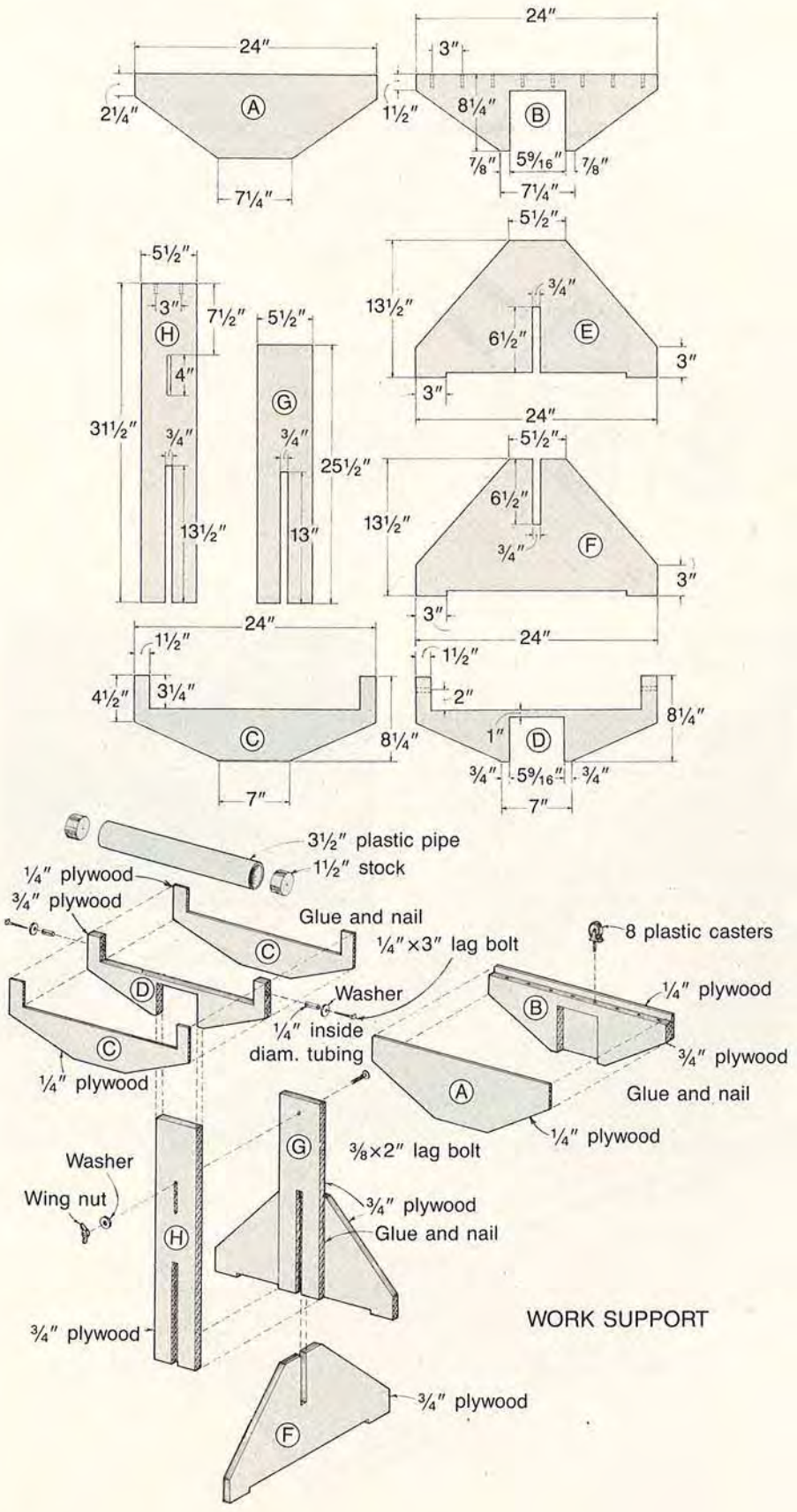
When crosscutting several short pieces to the same length, it's often recommended that you clamp a block to the rip fence just short of the saw blade to automatically set the length of the cutoff. However, this method still can result in the block possibly getting caught between the rotating blade and the fence, sending it dangerously whizzing across the shop.

A much safer system for you to employ is to simply clamp a short length of wood to the table surface as shown in photo 2. This way the cutoff pieces can just drift away from the blade or be pulled out of the way without any danger of them binding against anything.

To make it easy on yourself, cut a handy length of wood for the stop block and mark it in some way so you won't accidentally discard it or use it in another project. Drill a hole in one end and hang it on a nail somewhere near your saw.

Work support

When you're working by yourself in the shop, slinging around long boards or big pieces of sheet material, you really need the kind of help a work support like the one in



photos 3 and 4 can give you. There are lots of designs around for these things, but this one is easy to build, and has several nice features.

There are two interchangeable heads—one for ripping and one for crosscutting. The roller for the ripping head is made from a length of 4-inch plastic plumbing pipe. It's inexpensive and easy to find in any hardware store or building supply center. The large diameter works well to catch the end of that droopy board, rolling it up and over, instead of just pushing over the stand.

For crosscutting, the plastic casters in the other head roll the board along without a hitch. Maybe you'll want to build two bases, so you can use both heads at once for cutting large panels.

One other nice thing about this design—the base just slots together, so when you're not using the stand, you can pull it apart and stack or hang the whole thing flat somewhere out of the way.

An "improved" feather board

The old feather board idea (a strip of wood with a number of closely spaced cuts in the end) works well for holding the workpiece tight against the fence when ripping, but the gadget shown in photo 5 works even better and isn't all that much more complicated to make.

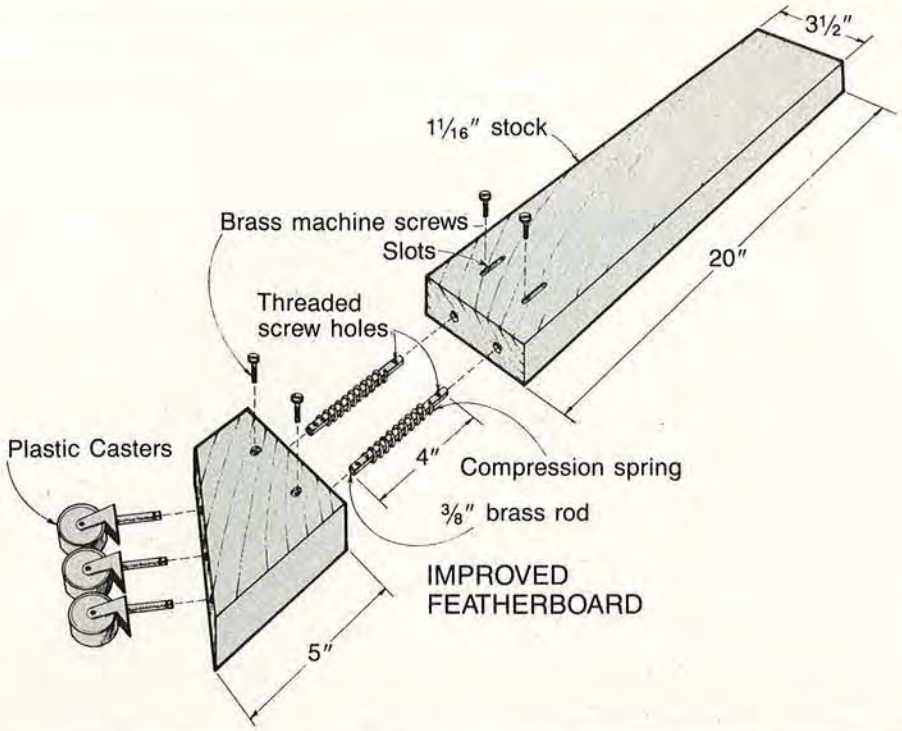
The plastic casters roll the stock right along without friction, and the two coil springs flex a bit to make up for any unevenness on the edge of the board. We used some lengths of brass rod we had lying around for the guide rods, but you

Continued

could use mild steel rods from the hardware store, or even some big spikes with the heads cut off.

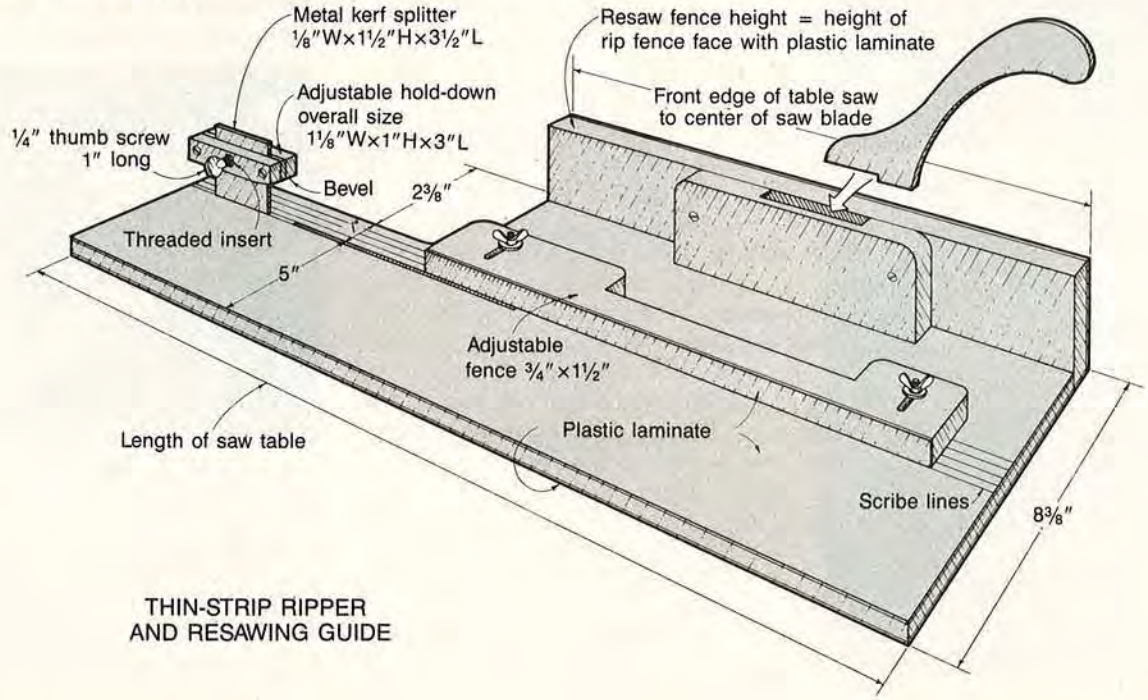
The push stick in use here is an improvement, too, we think, over the usual strip of wood with a notch in one end. This model, cut from a scrap of plywood, gives you some leverage to hold down the workpiece as it passes through the saw. True, your fingers are in the vicinity of the blade, but they're high enough to be out of harm's way.

Note: Whenever you employ a feather board, be sure to clamp it securely to the table, and make sure that you position it just ahead of the point at which the stock makes contact with the blade. If you accidentally place it beyond the point of cut, the pressure exerted will pinch the wood and may cause it to bind.



Combination thin strip ripper and resawing guide

Ripping thin strips can be a dangerous operation if you use your rip fence. You just never know when one will kick back out of the saw and shoot across the shop. The jig shown in photo 6 doesn't rely on the rip fence at all, but rather clamps to the saw table. The workpiece bears against the jig's adjustable fence only until it gets halfway through the saw blade, then the strip spreads away from the blade to prevent binding. And the adjustable hold-down near the rear of the jig, which adjusts up and down, keeps the strip from being forced up. The push stick gives your hand plenty of room, well clear of the blade, and it stores in its holster when not in use.

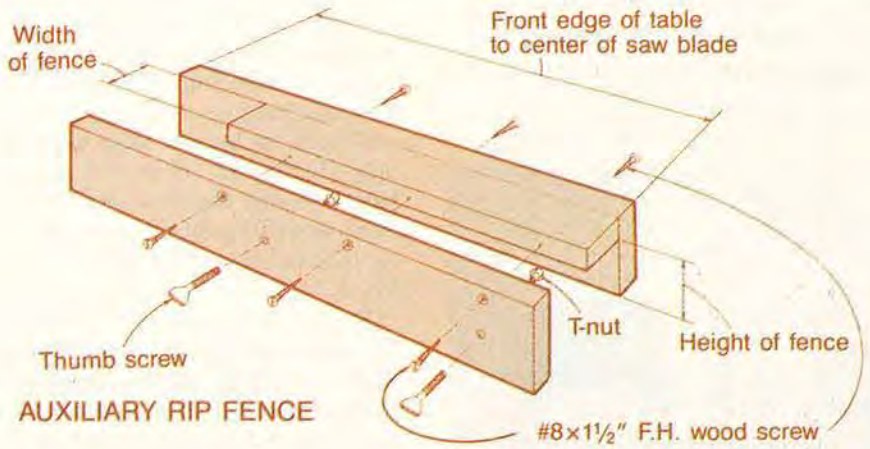


THIN-STRIP RIPPER AND RESAWING GUIDE

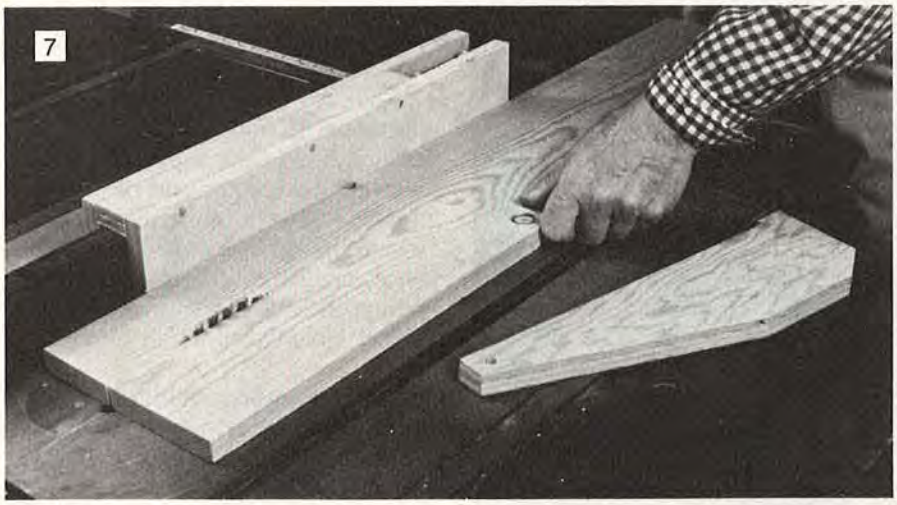
We banded the edges of the jig's ½" plywood base with thin maple strips. Then, to cut down on friction, we added some strips of scrap plastic laminate, glued on with two coats of contact cement, to the top surface as well as to all the bearing faces of the jig. We even stuck a strip of laminate to the vertical fence, which allows you to use the jig for resawing.

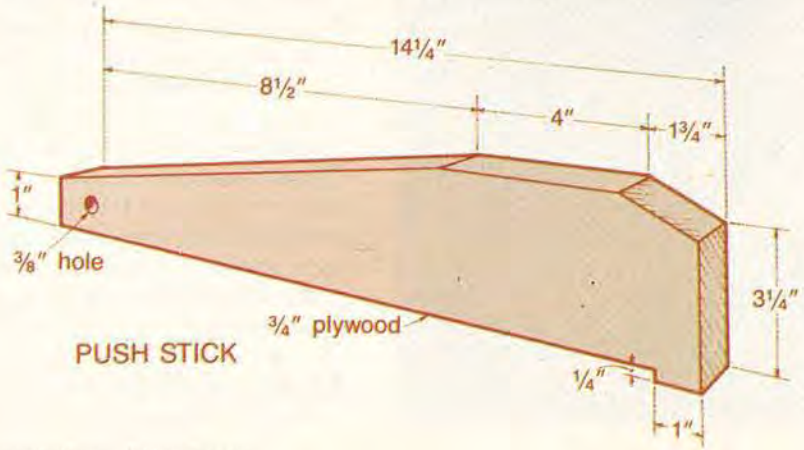
After cutting a kerf in the jig's base, we scribed a series of lines parallel to the kerf (at ¼" intervals) to help make aligning the fence an easier task. (You'll want to run a ball-point pen along the scratches to make the lines visible.)

To use the jig for resawing, first position the rip fence as needed, then do the same with the resawing jig, securing it in place with a clamp at either end of the jig. This setup gives you needed support on either side of the piece you're resawing. (Be sure to run a piece of scrap through the saw first to make certain your setup is correct. Then run the stock carefully and slowly through the saw.)



AUXILIARY RIP FENCE





PUSH STICK

Auxiliary rip fence

When you're ripping wider pieces of stock, a "halfway-through" auxiliary fence like the one in photo 7 can save a lot of wear and tear on your saw blade. There's no real need for the workpiece to bear against the fence, once it gets past the blade—it only creates more friction and the potential for binding. With this fence there's a little relief, so the kerf can spring apart a bit. We made this fence so you can take it off, but you could accomplish the same thing by just screwing or bolting a short strip right to your saw fence. Give it a try—you'll be surprised how well it works!

If you have a molding head cutter for your saw, you can use this fence for cutting partial profiles of any of your cutters. Crank the cutter down below the surface of the saw table, then move the fence into position so the portion of the cutter you want to use will engage the workpiece.

Now, turn on the saw and slowly crank up the cutter into the edge of the auxiliary fence. Crank it up a bit higher than you will need to make the finished cut, then make the final adjustment before cutting the profile on your workpiece. ■

Safety reminder

For the sake of photographic clarity, we have removed the blade guard in some of the photographs used in this article. We strongly recommend that whenever using a table saw or any other cutting tool for that matter that you keep all safety devices in place, even if they sometimes seem to get in the way.

Photographs: Al Elder
Illustrations: Bill Zaun

Easy does it

breakfast barstools

Can't find ready-made barstools that match your kitchen decor or counter height? Then build your own! You choose the wood and fabric with this easy-to-build plan. We sized these stools for a standard 36″-high breakfast bar. But the same design adapts to wet-bar seating. Just lengthen the chair leg bottoms 4″.

Note: We specify the materials needed to upholster one chair back and one seat cushion. But unless you know how to upholster, have this done professionally.

1 Using a table saw with a sharp blade, preferably carbide tipped, rip the oak stock into 1¾″ squares as laid out in the cutting diagram. Depending on the quality of the cut of your saw blade, you may want to make the squares slightly wider initially, then joint them down to 1¾″. (Accuracy is vital in cutting this stock, so be sure your saw is properly aligned before you start.) Next, crosscut the back legs (A), front legs (B), front and rear stretchers (C), and side stretchers (D) to length.

We pencil-marked each piece so the face grain of the legs and stretchers was on the sides of the barstool and the edge grain was on the front and back, as shown in the drawing. This provided a matching grain pattern on the finished product.

2 Rout a ⅜″ stopped groove ⅜″ deep and 5″ long in the tops of A, as indicated in the exploded-view drawing. Square the end of each groove with a ⅜″ chisel. Mark where the stretchers meet the legs. Next, mark the lag screw holes, offsetting the holes as shown in the Offset Hole Detail.

3 Rip and crosscut the back (E) to size, then cut a ⅜″ rabbet ⅜″ deep on both ends to fit into the grooves in the back legs (A).

4 To assemble each side of the barstool, arrange one back leg (A), one front leg (B), and two stretchers (D) on your bench top. Glue and clamp the stretchers to the legs. (When joining end grain to surface grain, we rub glue into the porous end grain, wait a few moments, and apply another coat. Only one coat is necessary for the surface grain of the mating piece.)

5 To further strengthen each joint, drive a ¼″×4″ lag screw through

the leg and into the stretcher. You'll need to drill dowel plug, shank clearance, and pilot holes—in that order—as shown in the Screw Hole Detail to keep the wood from splitting. You may also want to lubricate the lag screws with paraffin wax before driving them; they'll go in easier if you do.

6 Join the two sides, using the four remaining stretchers (C) and following the same process described in steps 4 and 5. Cut pieces of 1" oak dowel to length and glue them into the plug screw holes to conceal the lag screws.

7 Test-fit the barstool back into the grooves in the legs. The fit should be snug, but not binding. Hand-sand the rabbet if it's too tight.

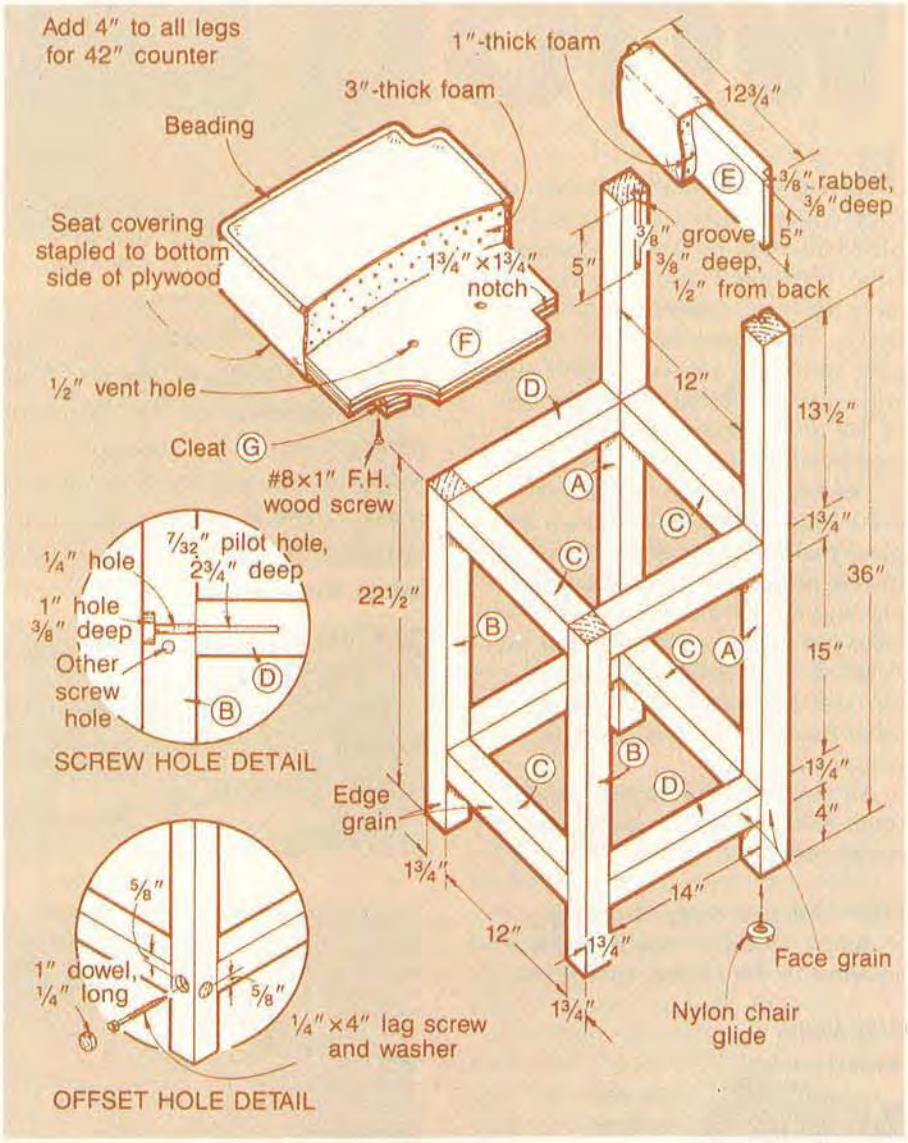
8 After the glue has thoroughly dried, carefully sand the plugs flush, then finish-sand the entire assembly. Attach the nylon chair glides to the bottom of each leg.

9 Apply the finish of your choice to the frame. Don't get any finish in the seat-back grooves. We finished ours with several coats of Minwax polyurethane, rubbing lightly between coats with steel wool and cleaning off any particles with a tack cloth. While we didn't stain the frames, you may want to so they match the rest of your kitchen furniture.

10 Cut the plywood seat (F) to size, then drill four ½" vent holes in it. Also cut a notch in each back corner to fit around the back leg. If you decide to tackle the upholstery, glue the foam rubber to the seat back and seat, then cover the foam with upholstery material. Apply glue to the rabbets on the seat back and glue the back in place. Wipe off any excess with a damp rag.

11 Cut the cleat (G) to size, position the upholstered seat on the frame, then screw the cleat to the bottom of the seat. (The cleat keeps the cushion in place.) ■

Design: George Granseth Illustrations: Bill Zaun
Photograph: George Ceolla



Bill of Materials
For One Barstool

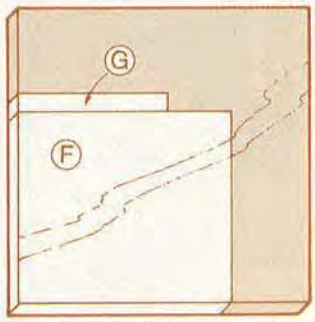
Part	Finished Size T	W	L	Material	Qty.
A	1¾"	1¾"	36"	oak	2
B	1¾"	1¾"	22½"	oak	2
C	1¾"	1¾"	12"	oak	4
D	1¾"	1¾"	14"	oak	4
E	¾"	5"	12¾"	oak	1
F	½"	15¼"	17¼"	plywood	1
G	½"	1"	11⅞"	plywood	1

Supplies: 16—¼" × 4" hex head lag screws, 16—¼" flat washers, paraffin wax, 1—1" dia. × 12" oak dowel, 3—#8 × 1" flathead wood screws, 4—1" nylon chair glides, 1 piece 1" thick foam 5" × 12", 1 piece 3" thick foam 15¼" × 17¼", 1 yard upholstery material, beading, staples, thread, finish

1¾" × 9¼" × 60" OAK

Cutting diagram

¾" × 5½" × 24" OAK



½" × 24" × 24" PLYWOOD

WOOD LATHES

Have you ever walked into a shop when someone had a big block of wood on a wood-turning lathe, spinning it into an intricate table leg or a magnificent wooden bowl? That chunk of wood, whipping around at 450 to 2,500 r.p.m. with shavings flying, has to be one of the most impressive sights in woodworking.

The beauty of turning is that even a novice can quickly turn a piece that looks much more difficult than it actually is. The fast, eye-pleasing results make the wood lathe just plain fun to own and use. After all, that graceful symmetry can't be duplicated readily by any other machine, or even by a skilled woodcarver.

All you need are turning stock, some finely honed chisels . . . and a sturdy lathe.

How the tail wags the dog

In almost all other woodworking equipment, the cutting tool spins, turns, or oscillates into the workpiece. Not so with the lathe. Here the cutting edge is stationary and the machine moves the wood into the tool.

Two physical laws govern the operation of any lathe. First, as the size of the turning block increases, so grows the need for more power and mass in the machine that spins the block. Second, wood varies considerably in density. A block can be considerably out of balance because of a knot or whorl in the grain. More commonly, a block has varying densities because it's been glued up from different woods. This puts tremendous stress on the bearings and other parts of the lathe, particularly the headstock.

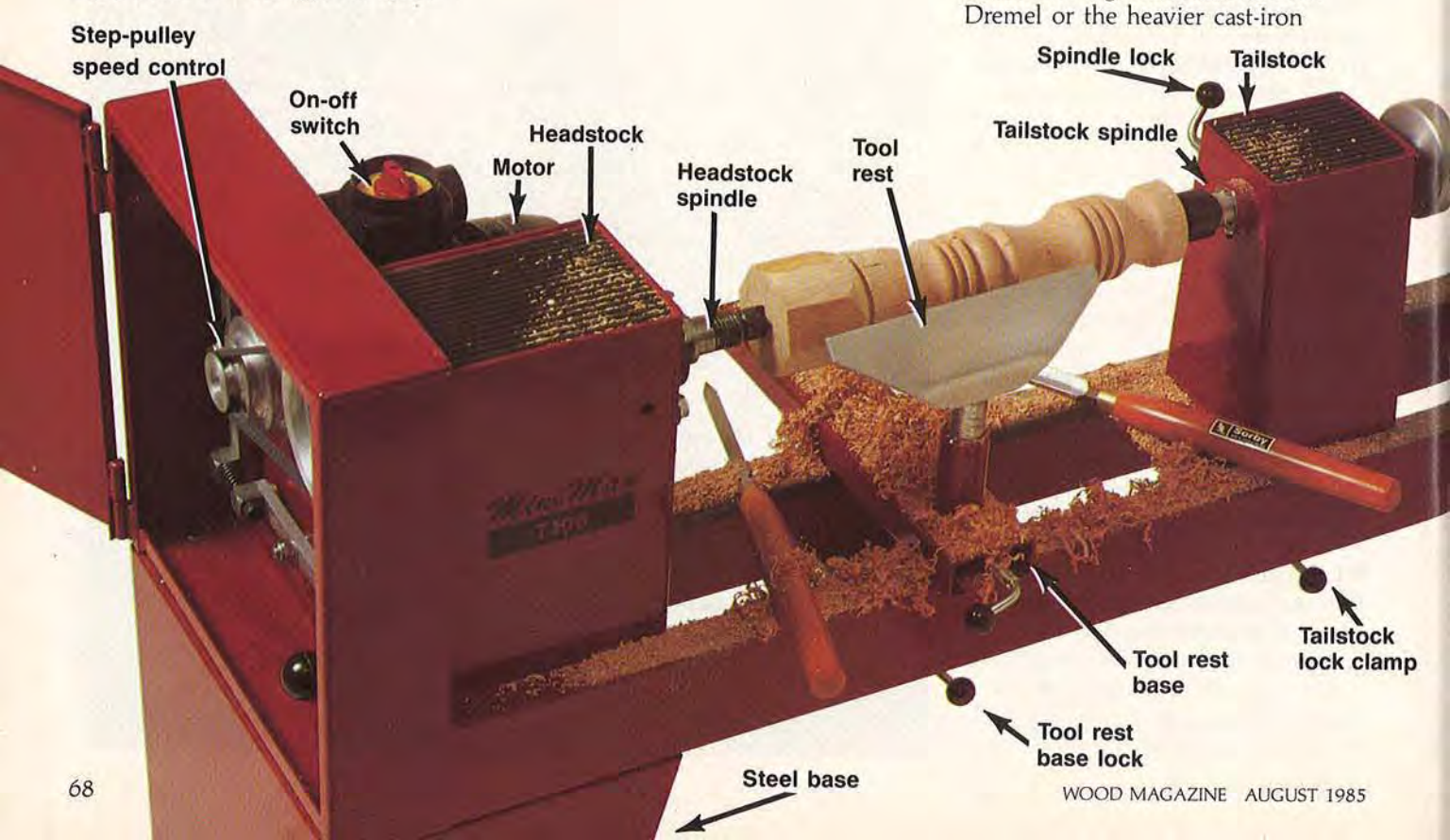
If you'll be turning small projects, or if you're not ready to go full-bore into turning, consider a lightweight, inexpensive lathe. You'll get good results within certain obvious limitations. For some uses, such as model-making, machines like the Dremel or the heavier cast-iron

WHAT'S BEST FOR YOUR SHOP?

Choosing the best lathe for your needs depends on the type of projects you'll be turning, your pocketbook, and the options you want. Here's a roundup of the latest in mid-priced lathes for the home shop.

See related articles on:

Turning between centers . . . . . page 35
Turning tools . . . . . page 79
Lathe buymanship chart . . . . . page 70



Conover and other mini-lathes are the *only* tools to consider.

Another alternative is a space-saving multi-use tool with a lathe as its basic component. These versatile machines are made by such manufacturers as Shopsmith, Total Shop, and Woodmaster (listed in buyman-ship chart).

The lathes pictured here are among the best available in mid-priced lathes (each is under $1,000). Close-ups of special features from these lathes appear on page 72; suppliers and manufacturers are listed on page 74.

CONOVER CL16-010

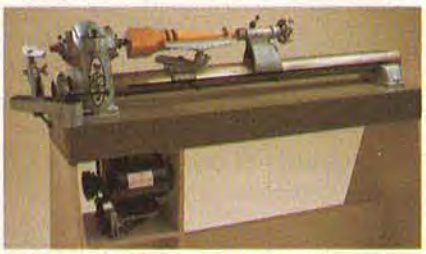
ELEKTRA BECKUM HDM-100

GENERAL 160-2

EMCO MAIER DB-6

DELTA 46-140

AMT 373



MYFORD ML8-B

WILLIAMS & HUSSEY L-82

A lathe for every pocketbook (almost)

Glance at the chart on page 70 and you'll find that wood lathes cluster in three broad price categories.

Prices start as low as $80–$250 for a very basic lathe. Missing from these models are conveniences such as indexing pins, Morse taper drive centers, and highly machined parts. Most lathes fall into the $650–$1,000 range, where you'll find a wide choice in features and capabilities.

The top-of-the-line lathes—Hegner, Harrison, Powermatic, and high-end Delta models—cost from $1,700–$3,000. These machines reflect superb quality and, as you'd suspect, are designed for the commercial market. But, as with many other stationary power tools, a savvy woodworker can find a good buy in a used commercial tool that still has good bearings and a true bed.

Look first at the lathe bed

The key job of any lathe bed is to securely support the head- and tailstocks, tool rest(s), and other accessories. There are as many styles of lathe beds as there are lathe manufacturers. Each has its advantages, either in function, cost, or both.

The rigid cast-iron beds of the Delta and General lathes absorb shock and wear well. Cast-iron beds also accommodate the versatile "gap bed" design. Here a recessed portion of the bed beside the headstock allows you to do faceplate turnings somewhat larger than those possible with the main bed. (No noncast lathes have this feature.)

Continued

COMPARISON CHART FOR WOOD TURNING LATHES

Mfgr.	Model number	Bed length (in.)	Swing (in.)	Max. faceplate diam. (inboard)	Outboard (Y/N)	Bed const.	Head/tail const.	Bearings	Index (Y/N)	Speed control	Motor hp.	List (bare)	Wt. (bare)	List (w/motor and stand)	Wt. (w/motor and stand)
American Machine & Tool (AMT)	2731 2731B 373	36 36 41	12	12	N	TT	CI	S B B	N	3-step pulley	½	$ 68 80 94	30 30 40	$ 117 wo/s 129 wo/s 143 wo/s	46 46 57
Conover	CL16-010	Unlimited	16	16	Y	W	CI	TR	Y	15-speed	¾	895 w/s	116	1018	136
Delta	46-140	36	11	15	Y	CI	CI	B	N	4-step pulley	½	431	98	551	120
Delta Standard	46-221 46-521	39	12	16	Y	CI	CI	B	Y	4-step pulley Vari	¾	NA	NA	2349 2349 2691	305 305 410
Delta Heavy duty	46-621	38	12	16½	Y	CI	CI	B	Y	Vari	1	NA	NA	3256	581
Duracraft	50537	37	12	12	Y	TT	CI	B	N	5-step pulley	¾	NA	NA	129 wo/s	99
Elektra Beckum	HDM 800 HDM 1000	32 40	15	15	N	MT	CAL	B	N	4-step pulley	½ ¾	495 w/m 575 w/m	65 75	615 695	77 88
Emco Maier	DB 6	39	15¾	15¾	N	FC	FS	B	N	4-step pulley	1⅓	NA	NA	764	110
General	160-1 160-2	38	12	15	Y	CI	CI	B	Y	4-step pulley Vari	1	575 999 wo/m w/s	140 350	991 1179	320 380
General	260	38	12	16½	Y	CI	CI	B	Y	Vari	1½	NA	NA	2150	600
Grizzly	G1025	40	15	15	Y	TT	Head FS Tail CI		N	4-step pulley	½	NA	NA	139	120
Harrison	Graduate	30 42 54	12	12	Y	CI	CI	B	N	4-step pulley	1½	2430 w/s 2545 w/s 2725 w/s	450 500 550	2668 2783 2963	475 525 575
Harrison	Short bed	15¾	19	19	Y	CI	CI	B	N	4-step pulley	1½	2165 w/s	375	2403	400
Hegner	HDB 200	39⅜	15¾	15¾	N	BB	CA	B	N	4-step pulley	¾	NA	NA	1795	250
König-Dreschelbank	K1000 K1001	39	16	24	Y	BB	CI	B	Y	5-step pulley Vari	¾	1150 w/m 1465 w/m	220	1412 1727	320
Mini-Max	T90 T100 T120	35.4 39.3 47.2	14 17.2 17.2	14 17.2 17.2	N	BB	FS	B	N	3-step pulley 4-step pulley	½ 1	595 w/m 650 w/m 700 w/m	132 176 183	680 735 785	198 246 253
Myford	ML8B ML8C	36 42	8	8	Y	MT	CA	B	Y	4-step pulley	1	783 845	90	1023 wo/s 1085 wo/s	110
Powermatic Gap Straight	145-0250 145-0260	39	12	16 12	Y	CI	CI	B	Y	4-step pulley	¾	1953	400	2078	450
Powermatic Gap Straight	145-0270 145-0280	39	12	16 12	Y	CI	CI	B	Y	Vari	¾	2158	400	2553	450
Sears Craftsman	9GT22828N	37	12	12	N	MT	CI	B	N	4-step pulley	½	250	63	445	204
Sears	9GT2387C 9GT2386C	36 41	12	12	N	TT	CI	B	N	3-step pulley	½	85 110	28 40	150 wo/s 175 wo/s	44 56
Williams & Hussey	L-82	45	12	12	Y	RC	CI	B	N[1]	4-step pulley	½	289	85	359 wo/s[2]	101
Shopsmith*	MK5	34	16	16	N	TT	CAL	B	N	Vari	1⅛	NA	NA	1299	198
Total Shop*	Total Shop	34	16½	16½	N	TT	CI	B	N	Vari	1½	NA	NA	1195	275
Woodmaster*	Cent. XXI	34	16½	16½	N	TT	CAL	B	N	Vari	1½	NA	NA	1250	275

Bearings
B = Ball bearing
S = Sleeve
TR = Tapered roller

Head/tail const.
CI = Cast iron
FS = Formed steel
CA = Cast alloy
CAL = Cast aluminum

Bed const.
BB = Box beam
CI = Cast iron
TT = Steel twin tube
MT = Steel mono tube
RC = Cold rolled C-channel
FC = Formed steel C-channel
W = Wood

List
w/m = With motor
wo/m = Without motor
w/s = With stand
wo/s = Without stand

*Multi-tools include table saw attachment.

1. Index optional.
2. Stand will be avail. by Sept., 1985.

Tubular steel twin rails appear in all of the multi-tool lathes, such as Shopsmith and Total Shop models. The twin rail system also is used in Elektra Beckum's two models and in the smaller-scaled AMT wood lathes. Other bed styles of varying gauges and materials include C-channel beds of cold rolled or formed steel (Williams & Hussey, Emco Maier); box beams (Mini-Max, Hegner); and monorails (Myford, Sears, Duracraft).

A word of advice to the beginning turner: As your expertise grows, you'll probably want to explore special features that are designed to be attached to the lathe bed. When you do, you may have problems securing accessories to round-rail or monorail tools. In most instances, though, you can fit any homemade or manufactured jig onto the tool rest base. Or, slightly modify the design.

The headstock

This is the "business end" of the wood lathe, where the main spindle and bearings are housed. Except for minor controls and possibly a live center in the tailstock, the headstock is the only part of the lathe that has any moving parts while turning. That's why it's so vital that the headstock be sturdy and securely attached to the bed.

The headstock has to be its toughest when a workpiece is out of balance, either by the nature of the wood or by the design of the turner (as with the spoon foot of a cabriole leg). The bearings, shaft, and other head parts take the full impact of vibration, as well as the hammering and dragging of the chisel as it presses into the block.

Speeds of up to 2,500 r.p.m. combine with the stresses of turning and cutting to make ball or roller bearings the only practical choices for the wood lathe. (Conover uses tapered roller bearings in its heavy-duty unit for maximum resistance to spinning and lateral stresses.) The only other option, sleeve bearings, soon succumbs to the stresses involved.

If you like faceplate-mounted projects, check the headstock for outboard mounting capability. Without any, you'll be restricted to turning only pieces with a radius shorter than the distance between spindle and bed. Some companies, whose lathes don't have outboard spindles, have increased that radius (see section on faceplate turning options, page 72).

Changing gears

There are several approaches to speed control on a wood lathe. The most common is the three or four step-pulley system. The Mini-Max pictured at the opening of this article is an excellent example that has the added feature of a lever belt-tightening system (see photo E, page 72).

Most belt-drive lathes that do not have built-in motors allow you to mount the motor below the lathe in order to keep the machine compact in size. However, some of the less-expensive units, such as the AMT, Sears and the Williams & Hussey, require that the motor be mounted directly behind the machine at the same level as the bed (see photo of AMT lathe, page 69).

Conover's wood-beam system also uses a behind-the-lathe motor mount, but the motor attaches to the beams and doesn't require a wide base table. Rear motor placement doesn't affect the operation of the lathe, but it does require a larger table to mount the machine—a potential problem in a small shop.

A few lathe models have mechanically operated dial- or slide-lever speed controls (see photo of General lathe, bottom of page 69). Such controls allow you to change the speed of the lathe without shutting it down. You also can change speed electrically.

We prefer the mechanical style of reducing speed through gears or belts. When a motor is slowed by cutting the voltage, horsepower drops faster than voltage. On the other hand, when you mechanically reduce speed, horsepower at the spindle increases. This is important early in a project when working at slower speeds.

The tailstock: holding up its end

To do its job, the tailstock, located logically enough opposite the headstock, must have two important characteristics:

First, it must lock securely to the lathe bed. Since the work piece is clamped between the head- and tailstocks, the tailstock must not move on the bed once locked or the wood will fly off the lathe. The best-engineered units have a locking nut, lever, or wheel that is easy to reach and simple to tighten. (Remember that you'll want to be able to adjust the tension on locking levers and wheels.)

Second, the dead center must drive securely into the end of the stock. There are several types of dead centers for various jobs, so being able to change them is a plus.

The entire tailstock slides on the bed to adjust for the length of your turning piece. For fine tuning, an adjustable centerpoint spindle also is included. This should move smoothly with an easy-to-use wheel and a strong locking handle. The adjustable spindle should move in and out two or more inches for use with a drill chuck.

Some lathes, such as the General and the Mini-Max, have scales mounted on the spindle in the tailstock for accurate measuring while drilling.

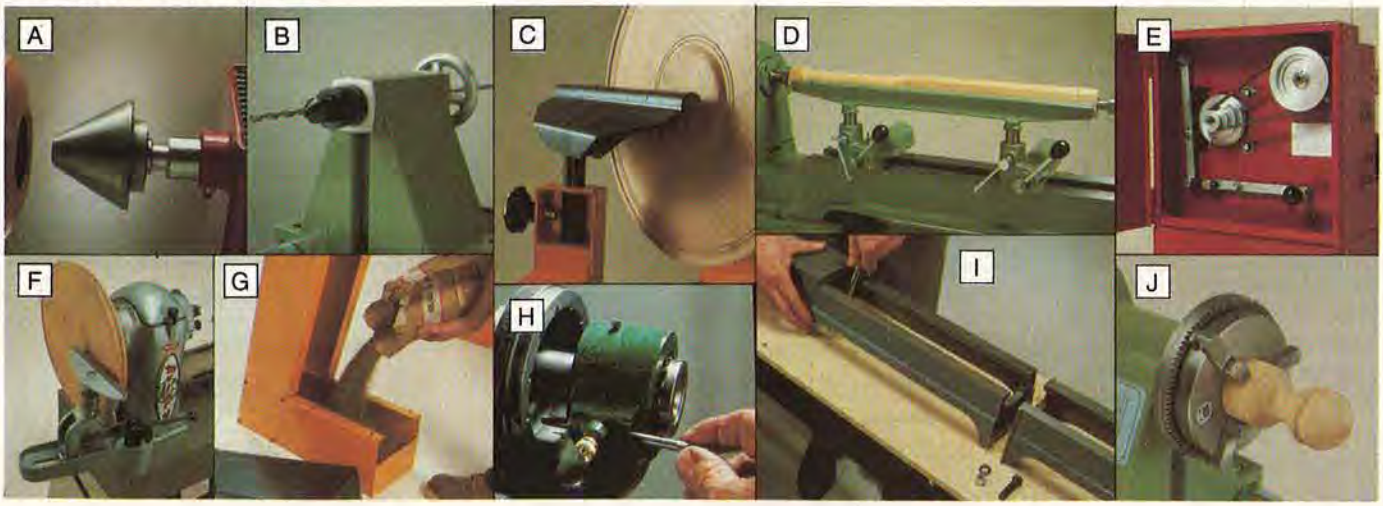
SPECIAL FEATURES

A B Options in centers

When it comes to centers, there are options besides the traditional cup-style tailstock center and the two- or four-bladed headstock center. In the tail, a ball bearing center reduces friction and drag. Grizzly Imports offers an oversized ball bearing "cone" center for previously drilled or hollowed-out workpieces (photo A, p. 72). Drill chucks, screw centers, and cutting centers also are available. Elektra Beckum and several others also offer hollow points to allow dead-center drilling in a project (photo B, p. 72). The message: When you're shopping, look for variety.

Continued

SPECIAL FEATURES



C D No rest for the tool rest

Also referred to as the steady rest, the tool rest is of either sheet metal or cast iron. Since the purpose is to support the cutting chisel, the main concern is rigidity. Tool rests also come in various sizes and shapes for different cutting conditions. The General cast iron double rest and the Emco Maier reinforced steel rest, both pictured, are good examples of the two types of rests and the firm locking brackets that hold them to the lathe.

E Step-pulley speed control

(See "Changing gears," page 71.)

F Faceplate turning options

One of the challenges of outboard turning is using a tool rest. Several companies offer floor stands, while some (such as the Myford pictured and Harrison) include a removable outboard tool rest. But this too will restrict the size of your project because the tool rest is still attached to the lathe. Also, all lathes with threaded faceplate spindles for both inboard (counter clockwise) and outboard (clockwise) turning require two sets of plates, one with right-hand threads and one with left-hand threads.

To compensate for the lack of outboard capability, some manufacturers, such as Hegner, Elektra Beckum, and Mini-Max, have increased the spindle-to-bed distance on their models.

In another approach, the Conover lathe is designed to allow you to turn the headstock around for outboard turning on the wooden beam bed. This requires moving the motor from one side to the other as well. König-Dreschelbank uses a swiveling headstock with a built-in motor to permit outboard turning while you stand in front of the lathe (instead of at the end).

G The lathe with a hollow leg

The Emco Maier wood lathe is a comparatively lightweight tool. To compensate, the unit has hollow legs that you can fill with sand once the lathe is in place in your shop. Most lathes, including this one, also have stands that can be bolted to the floor for stability.

H Indexing: it's nice

Several lathes like this Conover offer an indexing feature that has several uses. It's a good way to lock the head spindle while removing thread-on accessories. More important, it can evenly space sectors on a turned piece. With a router or drill jig fixed over the workpiece, you can rout flutes in a spindle. Or use the indexing feature to mortise support rails into table legs, spacing them flawlessly by inserting the pin in the appropriate index hole in the pulley.

I Seating capacity

As you study the chart on page 70, note that several lathe manufacturers include in their lines essentially the same lathe with different center-to-center capacity.

Instead of different models with longer turning beds, Delta came up with a unique solution. In their 11" lathe, the bed casting actually comes in two parts. You can start with the 36" gap-bed lathe, then add 16" sections to allow for longer and longer turning spindles.

Conover devised another solution by furnishing heavy cast-iron headstock, tailstock, and tool rest assemblies that you can mount on wooden beams of any length to suit your project. Either of these two extension possibilities is very useful when turning exceptionally long pieces, such as the posts for a Jenny Lind bed.

J Chucks that grip

Sometimes it isn't practical to use a faceplate. That's when a three- or four-jaw chuck like the one on this Elektra Beckum really saves the day. Although most people think of these as metal-turning chucks, they are just as comfortable on a wood lathe turning a ball-topped spindle or a delicate cup. One of these chucks can grip either the inside or the outside of the project without requiring screws, or in any other way marring the project. A note of caution, though: Keep hands out of the way and use a chuck guard.

Getting attached

Live and dead centers and faceplates

Continued on page 74

WOOD CARVING

Carved legs, appliques, brackets, turnings and posts plus lots of Victorian gingerbread; ideal for the home carpenter. All solid oak or poplar.

Send $3.75 for full color, 36-page product and design idea catalog

Cumberland Woodcraft Co. INC.

P.O. DRAWER 609, CARLISLE, PA 17013
Tel: (717) 243-0063 DEPT. 137WC

WOODWORKING
Plans, Projects and Designs

New things to make New Ideas

If you are interested in making useful and beautiful things out of wood, this new quarterly magazine is for you. Each issue will have at least 12 fully illustrated and fully explained plans of things for you to make.
A year's subscription will give you 48 plans, workshop tips, ideas and lots of pleasure.

Guild of Master Craftsman Publications Ltd
Parklands House, Keymer Road, Burgess Hill, West Sussex RH15 0BA, England.

Please send me full details of the Special Original Subscribers' Bargain Offer for Woodworking Plans, Projects and Designs. A

NAME
STREET
CITY
STATE ZIP

DUBUQUE CLAMP WORKS.

527 Garfield
Dubuque, Iowa 52001

8" Kit ~ 6.95 / 10" Kit ~ 7.95
12" Kit ~ 8.95 / 14" Kit ~ 9.95

Kits Include,

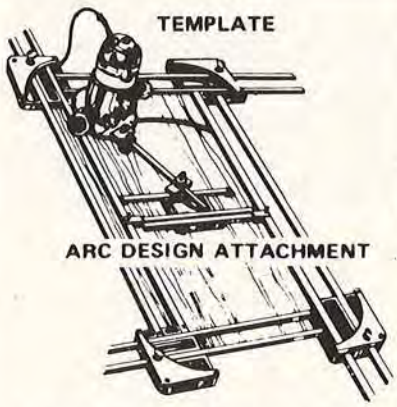
2-FREE Heavy Steel ferrules with spirol pins...
2-7/16 ACME, double lead, threaded rods...
4-5/8 Pivot nuts...
Complete layout with instructions.
Also available — 2 Wood handles. — $1.00

Send Check or Money Order
Visa or Master Card accepted.
WE PAY FREIGHT!

MIRO-MOOSE Quality Made in U.S.A. Dubuque, Iowa

Name: _____
Address: _____
City: _____ State: _____ Zip: _____
Visa: ☐ or M/C: ☐ Number _____
Exp. Date: _____
8" Kit: ☐ 12" Kit: ☐ Handles: ☐
10" Kit: ☐ 14" Kit: ☐

DUBUQUE CLAMP WORKS.
527 Garfield • Dubuque, Iowa 52001



COUNTLESS DESIGN COMBINATIONS

On panels, cabinet doors and drawers of all sizes ...quick, professional results every time with the **WING M-100 ROUTER TEMPLATE and the ARC DESIGN ATTACHMENT.**

BASIC TEMPLATE $146.00

ARC DESIGN ATTACHMENT $78.00

WING SALES & DISTRIBUTING CO. INC.

918 E. Cedar Lane
P.O. Box 1360
Payson, Arizona 85547
(602) 474-5836
(602) 474-3036

Tired of stains that don't match?
Tired of buying 2 or 3 colors to get the *one* color you want?
Tired of storing all those cans?

Well Modern Wood Products has the answer. **Complete Control™ Universal Wood Stain and Sealer.** One Kit allows you the flexibility to produce any shade in the walnut to mahogany range including natural. With **Complete Control™** you also get the added benefits of excellent penetration, sealing, and coverage.

To order phone using your Mastercard or Visa. Payment by regular check will delay shipment. Each quart kit is $12.00 plus $2.00 shipping and handling. California residents add 6% sales tax. Purchase 2 or more kits and we'll pay the shipping.

Modern Wood Products
3296 S. Mooney Blvd.
Suite 238
Visalia, CA 93277
(209) 625-3787 - 9am-5pm

CALL US FOR QUOTATIONS ON MACHINES & ACCESSORIES BEFORE YOU BUY!

POWERMATIC Model No. 26 Shaper— $1,690.00 FOB McMinnville, TN
with either #1260050 solid spindle or #1260010 interchangeable ½" or ¾" spindles, complete with motor and control.
Miss. residents add 6% tax.

Special net prices
Sale ends December 31, 1985
FREUD carbide raised panel cutters.

#EC-202	#EC-209
#EC-210	#EC-211
#EC-212	#EC-213

Prepaid in U.S.A.
$79.00 each

Call toll free 800-821-2750.
In Miss. call 800-321-8107.
Ask for Max, Bobby or Van.

Addkison HARDWARE CO. INC.

126 E. Amite St., P.O. Box 102
Jackson, MS 39205

NOW! Get in on the PROFITS in SMALL ENGINE REPAIR!

Start your own money making business!

Work part time, full time—right at home—we help you every step of the way.

No doubt about it... as a small engine pro, you can cash in on the huge demand for qualified men in one of America's fastest growing industries. You'll be able to command top hourly rates of from $25.00 to $30.00 per hour — and that's just for labor. A simple tune-up earns as much as $49.95 for less than an hours work, and parts, engines and accessories will add even more to the profits.

Plenty of business waiting for qualified men.

65,000,000 Small Engines Are In Use Today!

That's the official count from the Engine Service Assn., and one-million new engines are being built each month. With fully accredited Foley-Belsaw training, you can soon have the skills and knowledge to make top money servicing these engines. People will seek you out and pay you well to service their lawnmowers, tillers, edgers, power rakes, garden tractors, chain saws, minibikes, snowmobiles, generators, go-carts, paint sprayers, snowblowers... the list is almost endless.

Professional Tools and Equipment, PLUS 4 H.P. Engine ALL YOURS TO KEEP... All at No Extra Cost.

NO EXPERIENCE NECESSARY!

You don't need to be a 'born mechanic' or have any prior experience. You can master this profitable trade right at home in your sparetime. Lessons are fully illustrated...so clear you can't go wrong, and with our famous 'learn-by-doing' method you get practical 'hands-on' experience. We also show you how to get business, what to charge, where to get supplies wholesale...all the inside tricks of the trade you need to assure success right from the start.

Send for FREE Facts—Do It TODAY!

NO Obligation—NO Salesman Calls!

You risk nothing by accepting this offer to see how easily you can learn the skills you need to increase your income in a high-profit business of your own. ***Just fill in and mail coupon below (or send postcard with name and address) to receive full information by return mail.***

RUSH COUPON TODAY

Foley-Belsaw Institute
50693 Field Building
Kansas City, MO 6411

FREE BOOKLET!

Send for your copy today!

FOLEY-BELSAW INSTITUTE
50693 FIELD BUILDING
KANSAS CITY, MO 64111

FOLEY BELSAW

☐ **YES,** please send me the FREE booklet that gives full details about starting my own business in Small Engine Repair. I understand there is **No Obligation** and that **No Salesman** will call on me.

NAME_____

ADDRESS_____

CITY_____

STATE_____ ZIP_____

Continued from page 72

WOOD LATHES

attach to the lathe in a variety of ways: setscrews, Morse tapered shaft, or thread-on centers. Faceplates use set screws or threads (either left or right hand). The best of these are thread-on faceplates and Morse taper shafts on centers. These types tend to stay the tightest and are quickest to install and remove.

Thread-on accessories aren't interchangeable from one machine to another. Morse taper points are interchangeable, however, within the limits of the three popular sizes (Morse nos. 1, 2, and 3). Units with setscrews can slip, but they will serve well if tightened carefully and checked periodically while working.

What's new in copiers

Copy attachments are another intriguing option for wood turners. Highly accurate (and expensive) commercial-style units are available (Hegner offers a power-driven automatic unit and Mini-Max has an excellent manual copier that costs almost as much as the lathe itself). Other copiers accommodate the home woodworker's budget better.

Grizzly Imports offers a copier and lathe package with a rack-and-pinion copier for less cost ($295) than most copiers alone. From the looks of this machine, it could be hard to get a better price-to-product ratio. (Unfortunately, the model was not yet available at press time, and we could not include it in the buymanship chart on page 70).

Several other companies including Delta, Emco Maier, and Elektra Beckum offer copiers. Although these are fairly expensive items, they may pay their way if you're planning to build beds, stair rails, or similar items with repeated spindles.

About the lathes featured in this article

When we began researching this article, we sought out the best innovations in wood lathes available today. The nine lathes shown were selected because they offer some feature(s) that make them unique among mid-priced lathes under $1,000. It's an international collection, representing America (AMT, Conover, Delta, and Williams & Hussey); Austria (Emco Maier); Canada (General); England (Myford); Germany (Elektra Beckum); and Italy (Mini-Max). Auto buyers aren't the only consumers who are benefiting from international trade these days!

Our thanks to the following manufacturers and suppliers of the wood lathes that are shown in this article:

- AMT model 373. American Machine and Tool, Fourth Avenue and Spring Street, Royersford, PA 19468.
- Conover CL16-010. Conover Woodcraft Specialties, Inc. 18125 Madison Rd., Parkman, OH 44080.
- Delta 46-140. Delta International Machinery Corp., 246 Alpha Dr., Pittsburgh, PA 15238.
- Elektra Beckum HDM-1000. Elektra Beckum USA Corp., 401-403 Kennedy Blvd., P.O. Box 24, Somerdale, NJ 08083.
- Emco Maier DB-6. Emco Maier, P.O. Box 07824, Columbus, OH 43207.
- General 160-2 (less motor). J. Philip Humphrey Ltd., 3241 Kennedy Rd., Scarborough, Ont., Canada MIV 2J9.
- Mini-Max T-100. Mini-Max USA Inc., 3642 NW. 37th Ave., Miami, FL 33142.
- Myford model ML8-B (less motor). Woodcraft Supply Corp., 41 Atlantic Ave., P.O. Box 4000, Woburn, MA 01888.
- Williams & Hussey L-82. Williams & Hussey, RR 101 West, Milford, NY 03055.

Many of these machines and others listed in the buymanship chart on page 70 are not generally available in retail stores in the U.S., but they are available by mail order. Check the ads in *WOOD* and other woodworking magazines for suppliers, or write the manufacturers. ■

Photographs: Hopkins Associates

HOW TO LEVEL A WOBBLY PROJECT

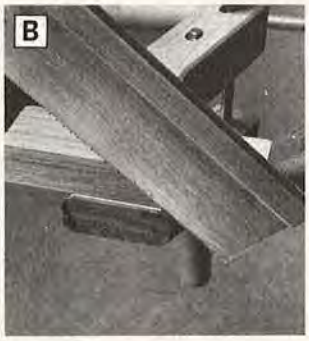
You've cut and assembled your table or chair project, and it looks terrific except for one thing—the darn thing wobbles. Try this simple procedure to set things straight.

Use our technique to level a piece with four or more legs. In a three-legged piece, the single offending leg obviously is easier to identify and remedy.

First remove any glides or cushions from the bottom of the legs. Then place the piece on a level work surface and set your level on the tabletop or chair seat so that the level points toward two directly opposite legs.

Shim beneath the legs as necessary until the top surface reads level, then rotate your level 90°. Check for level again and shim as needed. Now shift your level back to the original position to make sure it's still true there.

Next measure the gap between the work surface and the bottom of the leg that's the farthest above



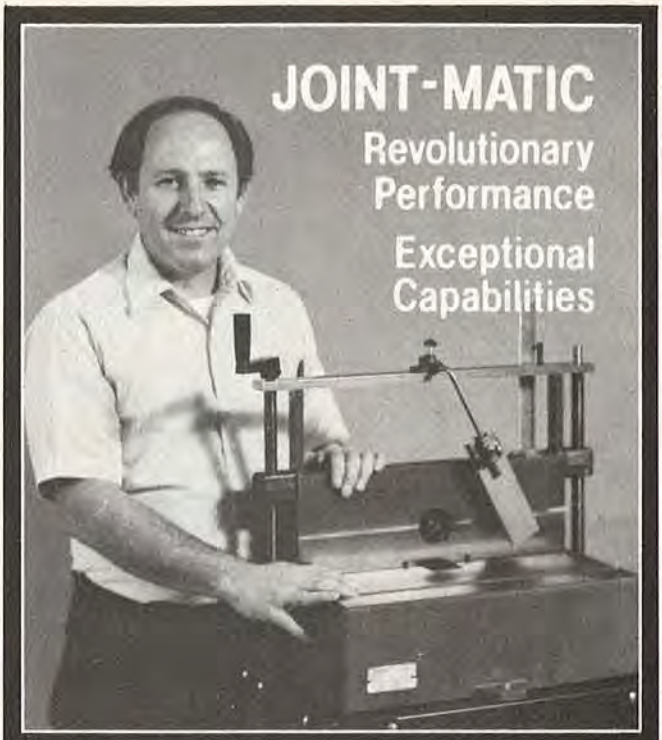
that surface. Make a shim about 1/16" thicker than the gap is wide and place a pencil on its side atop the shim. Mark a line along the bottom of each leg (photo A) to determine where to cut in order to level the project.

Lay the entire project on its side and cut the bottom of each offending leg(s) with a jigsaw or handsaw (we use a clamped-on piece of scrap wood as a guide—see photo B).

When your level indicates satisfactory results, touch up the project by smooth-sanding as required and applying stain or finish. Install new glides if needed.

In some instances, trimming the bottom of the offending leg(s) would ruin the looks of the piece. In these situations, you may want to build up the leg with a pad until the project is level, then shape the pad to the contour of the leg and finish as necessary.

You also can opt for adjustable glides screwed in with T-nuts, as on appliances. If all else fails—head back to the workbench to fashion a replacement leg. ■



. . . The Joint-Matic 4200 is a new system in joinery that offers operating convenience, efficiency and accuracy that can not be compared to anything on the market. The Joint-Matic will help you produce woodworking pieces of elegance, precision and beauty more quickly and expertly than you ever thought possible. Now, in minutes make . . . Mortise, Tenon, Sliding and Through Dovetail, Box Finger Joint and much much more. Exclusive features of the Joint-Matic are so advanced in design and simplicity that set up time has been all but eliminated.

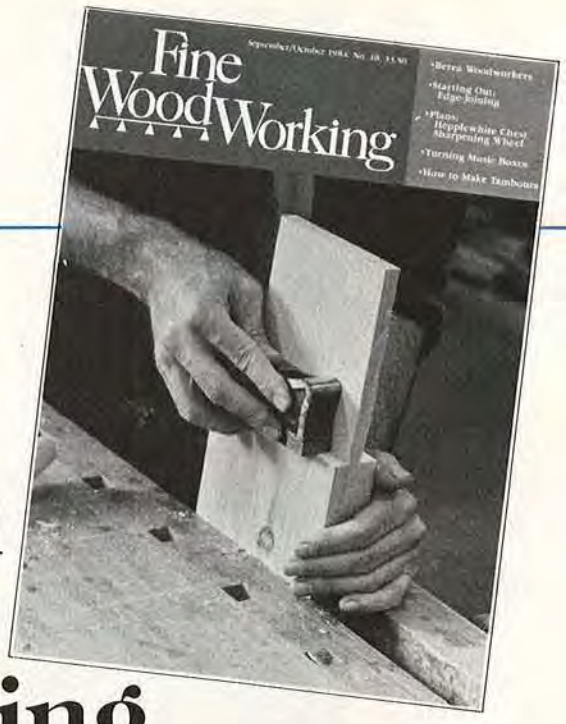
Features:

- Built for ruggedness and rigidity the table and slide unit have extra deep ribbing allowing a more accurate and chatter free cut.
- The base is heavy ribbed 1/2 inch thick casting, hardcoat anodized aluminum to a 52 Rockwell.
- The adjustment screws are rolled thread with a thread pitch of 3/4-16.
- Accuracy can be achieved to as close as .001th of an inch.
- Comes equipped with a 1-3/4 H.P. router.

For Your Brochure Please Send $2.00 to:

Strong TOOL DESIGN
20425 Beatrice
Dept.W
Livonia, MI. 48152

Joint-Matic Machine Is Protected By U.S. Patent 4,163,465



If you love working with wood...

Fine Woodworking is the magazine you've been waiting for. A year's subscription brings you an incredible range of information—on joinery, turning, carving, bending, finishing, machines, handtools and any of a hundred different woodworking specialties.

You'll find projects that teach you new skills, demonstrations of tools and techniques, new ideas, old-world traditions, shop tests and some breathtaking examples of the woodworker's art.

And we reserve at least one-quarter of each issue especially for our readers—a place where they can ask questions, air opinions and share jigs, tips, tricks and discoveries with each other.

If you'd like to join them, send for your subscription today. A year of *Fine Woodworking* (six issues) is just $18, and we guarantee your satisfaction.

For immediate service, call toll-free 1-800-243-7252

Yes, I'd like to try *Fine Woodworking.*

Please send me the next issue and bill me just $18 for a year's subscription —five more issues ($21 in Canada, U.S. funds, please). If I'm not completely satisfied, I'll mark my bill 'cancelled' and owe nothing. (The issue is mine to keep.)

Name _____

Address _____

City _____ State _____ Zip _____

☐ Bill me ☐ Payment enclosed ☐ MasterCard ☐ VISA ☐ Am. Exp.

Charge card # _____ Exp. date ____

Signature _____

The Taunton Press
63 South Main Street, Box 355PWAA, Newtown, CT 06470

Continued from page 46

final length of each can be gauged outward from the hub, and the outer tenon marked and cut.

Fellies and tires

The rims of the wheels are made up of sections called *fellies.* They, too, demand tough wood—beech, ash, hickory, or oak—sawn out along the length of the grain. Each felly has two mortises to take two spokes, thus a 12-spoke wheel requires six fellies. When the fellies are driven hard onto the spokes, there still may be visible gaps between them—but not for long. Everything will be drawn together by the contraction of a hot iron band called—you guessed it—a tire.

After heating the tire in an open fire until it is hot enough to ignite a hickory splint, the wheelwright drops it over the wheel. Immediately dousing it with water, he bangs it with his hammer to even out the relentless contraction of the iron ring. As the iron cools and the joints draw tight, the wheel becomes one, ready for the road, as strong as it can be.

The iron tire, after heating in the fire, is about to be dropped over the wheel. An old millstone serves as the tiring platform.

The wheelwright and his wheels were vital to life in the early-day village. So was the cooper, who fashioned and maintained the barrels and casks used to store a hundred items. Coopery is the subject of the next Old Hand Ways column. ■

Continued from page 43

pedestal stand

together to mark the location of the dowel holes on the pedestal. Drill ⅜" holes ⅞" deep in the pedestal, then sand the legs smooth.

6 Using a ⅜" round-over bit, rout all edges of the legs except the bottom edge where the leg meets the floor and the top edge where the leg connects to the pedestal.

7 Trial-fit the legs into their respective holes and set the table base on a perfectly flat surface. If it tilts, see the article on page 75 of this issue for how to level the legs. Once the table sits perfectly level, glue, dowel, and clamp the legs to the pedestal as shown in photo.

Final assembly

1 Using a handsaw, cut a slot in the center of the tenon end of the pedestal and a wedge to fit the slot. The wedge should just slightly expand the tenon yet firmly hold the ring (B) in position. Sand the wedge to shape.

2 Fit the ring onto the tenon, then glue and drive the wedge into position.

3 Finish-sand all the parts and screw the pedestal to the top. Finish as desired. ■

Photographs: Bob Calmer
Illustrations: Bill Zaun

$12 AN HOUR
YOU CAN EARN UP TO THAT AMOUNT

Start Your Own Business! Earn Extra Income Right At Home.

Sharpen Saws...
...ALL Garden and shop tools for home and industry

Get In On The Profits!

Yes there's plenty of business waiting for the man who can professionally sharpen saws and all types of edge-cutting tools. SHARP-All does them all, and at big profit for you. No inventory is involved... no selling. You earn a year-round Cash income and make 90¢ profit out of every dollar you take in. Work sparetime hours or fulltime right at home, and no experience is needed.

Send TODAY for details of our 30-Day FREE Trial Offer!

With SHARP-ALL It's Easy To Get Started!

You don't need to invest thousands of dollars to get started in business for yourself. Low cost Sharp-All and our 50 years of experience in helping sincere men to earn extra income, plus the desire to get ahead is all you need. Complete Operators Manual gives clear, step-by-step instructions, shows exactly how to sharpen each tool, where to get the "tricks of the trade". And Sharp-All does the kind of precision job that brings customers back time after time.

There are NO franchise fees of any kind. With Sharp-All YOU are the boss... YOU set the hours you want to work... you put the profits in YOUR pocket.

FREE BOOKLET! Send for your copy today. No obligation.

If coupon has been removed, just send us a postcard with your name and address to–

FOLEY-BELSAW CO.
60478 FIELD BLDG.
KANSAS CITY, MO 64111

There is NO OBLIGATION and NO SALESMAN Will Call!

FOLEY-BELSAW CO.
60478 FIELD BLDG.
KANSAS CITY, MO 64111

RUSH COUPON TODAY!

☐ **YES,** please send me the FREE booklet "*Lifetime Security*" and full details on your 30-Day Free Trial Offer. I understand there is No Obligation and that No Salesman will call on me.

FREE BOOK

NAME _____

ADDRESS _____

CITY/STATE _____ ZIP _____

aulStair

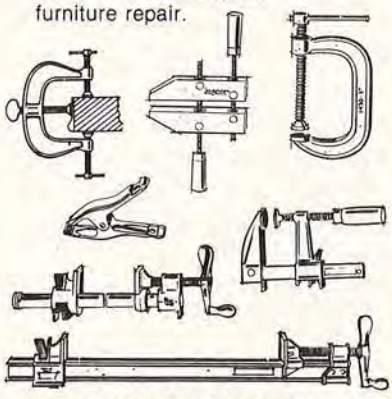
1330 Union Hill Rd., Dept. F
Alpharetta, GA 30201
404-475-3696

Oak kits from $1935 complete. Other wood spirals from $1295 complete.
Brochure $1.00

"Jorgensen"® AND "Pony"®

CLAMPS

Dependable extra hands for all types of clamping and work-holding jobs: woodworking projects, home maintenance, and furniture repair.



Write for FREE LITERATURE. For big 32-page "how-to-clamp-it" catalog, send 50¢.

ASK YOUR DEALER

ADJUSTABLE CLAMP COMPANY
THE CLAMP FOLKS
410 N. Ashland Ave./Chicago, IL 60622

EASY WOOD FINISHING with

WATCO®

The Original

DANISH OIL FINISH

You'll be amazed at how easy it is to finish wood beautifully with Watco Danish Oil. Watco gives wood that natural hand-rubbed look with long-lasting durability. And because Watco is **IN** the wood... not on it like temporary surface coatings.. there is no finish that will wear off. Watco Danish Oil is ideal for furniture, antiques, paneling, cabinets, doors, and trimwork. It's also safe for butcher blocks, cutting boards, and children's toys. Choose from 8 beautiful finishes... Natural, and Medium, Dark, and Black Walnut shades, and Cherry, Golden Oak, Fruitwood, and English Oak colors.

Send today for **"FREE"** color booklet **"HOW to Beautifully Finish Wood"** and the name of your nearest Watco distributor.

WATCO-DENNIS CORP. 1756-22nd St. Santa Monica, CA 90404, Dept. BH-W75

Name _____

Street _____

City _____

State _____ Zip _____

213/870-4781

Continued from page 47

DUST MASKS AND RESPIRATORS

A *dust mask respirator* utilizes a mechanical filter to remove only dust from inhaled air. It won't trap vapors of evaporating solvents or the liquid droplets called aerosols from overspray.

To remove dust and the mist of aerosols, you'll need a *dust and mist respirator.* But they're of little protection against harmful vapors.

The *fume respirator* guards you against vapors as well as dust and mist. It does it by the filtration of one or two special canisters equipped with a purifying element. This element reacts with the vapors and removes them from the air drawn into the mask when you breathe. A filter in front of the element catches dust and the droplets of aerosols. To keep the mask working properly, you have to change the filter(s) regularly.

Full-protection face masks

Usually found in industrial or production situations where they are worn nearly continuously, full face masks guard eyes, nose, and mouth.

These masks, while expensive, protect against dust, mist, fumes, and flying chips. You can expect them to make a better seal, too.

Shopping for protection

Before buying any type of respirator, you need to determine exactly which hazards you most frequently encounter in the shop, then choose a dust mask, a dust and mist mask, or a fume mask accordingly.

Most woodworkers can get by with a partial face mask solely for dust unless they do quite a bit of finishing and refinishing in a poorly ventilated area.

If you already experience a breathing problem, or have a heart condition, a mask with a dual cartridge filter system (two canisters) offers less resistance. Check with your doctor before you buy.

A mask must fit to be as effective as it was designed to be. Proper fit not only ensures a tight seal, but wearing comfort, too. Partial and full face masks feature adjustable straps for the back and top of your head—the more straps, the better the mask will fit.

Mask material also influences its seal. The softer and more supple the material from which it's made, the tighter the seal to your face.

A beard or facial stubble, scars, and cheek bone structure all affect the way a mask fits your face. And if you wear dentures, you'll obtain a better fit with them in place. It's wise, then, to try on different styles and masks from several manufacturers to find the one best suited to your facial contours.

When trying on different masks, check them for seal with the negative pressure test: Place your hands over the filter and/or exhaust valve and inhale. Air leakage indicates a poor seal. You'll also want to try normal and deep breathing, moving your head around, and talking.

Using a respirator mask

With any respirator, always check the seal. Inspect the mask carefully for holes, cracks, worn buckles, and fittings. Replace them as needed.

Be sure the exhaust valve works properly, and replace filters and cartridges regularly.

With fume masks, cartridges differ according to the hazard, so make sure you're using the correct one. Old cartridges become inefficient. And because cartridges undergo a chemical reaction with the fumes, they can generate heat in a heavy concentration. If a new cartridge becomes hot during use, the fumes may be too heavy for adequate protection. Remember, none of the respirator masks we're talking about *create* oxygen for breathing—they only filter it.

To clean a mask, use soap and water, but keep the solution away from filters and cartridges. Store it in a dry, clean place. ■

—with Roger W. Cliffe, Associate Professor, Industrial Technology, Northern Illinois University

Photographs: Scott Little

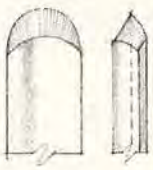
Print this article

SPINDLE TURNING TOOLS

Knowing which tool to use, and when, can make turning between centers smooth as silk. Here are the basic tools you'll need and some recommendations.

THE BASIC SPINDLE TOOLS: AN EXPERT'S ADVICE

Dale L. Nish, Professor of Industrial Education at Brigham Young University and an authority on wood turning, suggests these tools for basic spindle turning: a ¼" gouge, a ½" gouge, a ½" skew chisel, and a ⅛"-edge-thickness, diamond-shaped parting tool. Nish says these tools, in high-speed steel with standard length handles, will fashion spindles up to 2" in diameter. Work of this size and smaller, he advises, represents 90 percent of the spindle turning done by home woodworkers.

TOOL	TYPE	WIDTHS	BEVEL	USES & COMMENTS
GOUGE 	Cutting	¼" to 2"	30–45°	Bevel on convex side of tool wraps around cutting edge in fingernail shape. Used for turning square stock into cylinders. Intended to be rolled during use. Can also be used for scraping when not honed or at proper angle. Spindle gouges most adaptable in ½" size; roughing gouge in ¾" or 1¼". Flutes shallow to deep.
SKEW CHISEL	Cutting	½" to 1½"	20–25°	Cutting edge "skewed" 30–35° from tool end; bevel is twice as long as steel thickness. Used for smoothing tapers, cutting beads or V's, and end grain. Sizes most used are ½" to 1". Can scrape with burr edge or by changing angle.
PARTING TOOL	Scraping	½" to 1"	25°	Cuts grooves and recesses, forms tenons and shoulders. Makes square-bottomed cuts with flat sides. Diamond shape in ¾" or 1" size is most versatile. Tips can be ⅛" or ¼" in edge thickness.

FREUD PROFESSIONAL 15 PIECE ROUTER BIT SET.

Freud carbide tipped router bits are used by professional woodworkers and serious craftsmen throughout the United States. We asked Freud to select the 15 most needed router bits and install them in a sturdy wooden case. The result was everything we expected and less - a lot of tools for a lot less money than we dreamed possible. Freud's total list price with the case is over $300.00. Our price is little more than ½ of list! Here's what you get.

04-106	Straight	32-100	Rabbeting
04-140	Straight	34-114	Rounding Over
16-100	Mortise	38-100	Roman Ogee
18-104	Round Nose	40-106	Chamfer
20-104	V-Groove	42-106	Trimming
22-104	Dovetail	64-100	Trimming
26-100	Panel Pilot	66-100	Trimming
30-106	Cove		

Router bits are all ¼" shank. CODE WDMA5H

$167.50 ppd

800-343-3248 (USA)
800-322-6100 (MA)

TREND-LINES, INC.
375J Beacham St.
P.O. Box 6447J
Chelsea, Ma.
02150

Fast Delivery!

Quartz Clock Movements

M88 Thinline

2-3/16" square x 5/8" thick
Step sweep hand. Uses AA cell.

Made in Japan by the world's largest producer of quartz timepieces.

LOW LOW PRICES!

1-2 $6.95	25 @ $3.95	50 $3.65
3-9 $4.95		FREE HANDS
10-24 $4.35		

PRICES INCLUDE HOUR AND MINUTE HAND. ADD 25¢ FOR SECOND HANDS.
Add $2.00 per order for postage & handling.

MONEY BACK GUARANTEE!

NEW CATALOG
55 pages of clock movements, dials, accessories, hands, tools, and more!
Catalog #784 $1.00
(Free with order)

Cas-Ker Co.
Box 2347-R, Cinti. OH 45201
Phone (513) 241-7073

PLANS

FERRIS WHEEL

We don't think you'll find a toy like this anywhere else! Children head for this toy straight away. Plan includes patterns for people. Size 12" x 14", by 22" high.
$6.00 for plan.

DOLL BUGGY

A treasure for any girl! All wood, including wheels. Room enough for a family of dolls. 12" wide, 25" long, 30" high.
$8.50 for plan.

These are only 2 of 40 toy designs that are shown in full color. in the book **"Strom Toys"**. Includes 12 mini-plans. **$9.95**

GAZEBOS

8½ x 11 book contains designs for 55 gazebos, 13 strombrellas, 7 arbors, 18 birdfeeders & houses. Plus 1 gazebo plan and 2 birdfeeder plans. **$7.95**

OTHER BOOKS AVAILABLE

Backyard Structures - 65 designs for all kinds of storage, full color. **$8.95**
Privy - 25 designs to use for all kinds of needs. Funny history! **$7.95**
Bridges & Cupolas - 65 designs, many sizes. Some history. **$7.95**

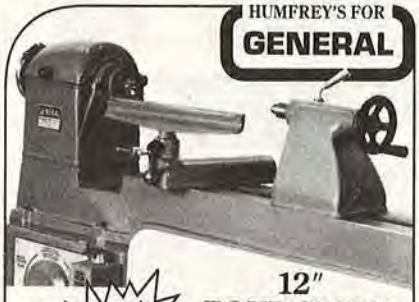
P.O. Box 206, Dept. 34
Delafield, WI 53018
(414) 567-4255

SUN DESIGNS

MONEY BACK GUARANTEE

MC & VISA ACCEPTED

HUMFREY'S FOR **GENERAL**



SUMMER SALE! MENTION THIS AD WHEN YOU ORDER SAVE $50. (Sale Ends August 31/85)

12" FOUR SPEED WOOD LATHE #160

- Rugged cast iron construction
- 38" between centers. 140 lbs.
- c/w Spur & Cup Centers, 4" & 12"
- Tool Rests, 3" Face Plate, Belt & Motor Pulley
- Metal Cabinet Style Stand available

SHIPPED FREIGHT COLLECT
SUMMER SALE
$575. U.S.*
~~$625.~~ U.S.*
NO OTHER CHARGES
*Electrics extra

HUMFREY'S ORDER PHONE IN THE U.S. CALL TOLL FREE
1-800-387-9789

J. Philip Humfrey Ltd.

3241 Kennedy Road, Unit 7 Department WM 7/8d
Scarborough, Ontario M1V 2J9 (416) 293-8624

Please rush me details on General 12" lathes.
I enclose $1.00 for postage and handling.

Name _____
Address _____
City _____ State _____ Zip _____

the American Woodworker

Receive A Free Copy Of The American Woodworker
1/3 Off Subscription Offer

If you enjoy woodworking, The American Woodworker is a must for you. It contains projects on three levels: beginning, intermediate and advanced. The plans alone are worth the subscription price. Our subscribers pay approximately 31 cents for each plan. Each project is well illustrated and photographed. Each issue is loaded with information showing in detail how to perform a specific woodworking operation, plus how to build time saving jigs and shop equipment that will save the woodworker hundreds of dollars. Informative articles explain how to compensate for the movement of wood, the basics of carcass construction, how to build a shop dust system for under $300.00, etc. These are a few examples of the types of articles you can look forward to. Listed below is a summary of what to expect from The American Woodworker.

- **Projects on 3 levels**
- **Large 9x12 size**
- **All different styles of furniture & projects**
- **A column on finishing**
- **A section on jigs**
- **Woodworking techniques**
- **A Question & Answer column**
- **In-depth instructional articles**
- **Supply sources, visits, reviews & much more**

The American Woodworker is published quarterly in March, June, September, and December so each issue is the type of publication that you will save for years to come. The subscription price is $10.00 per year, $18.00 for two years. Subscribe today for two years and we will send you our March (Premier) issue free. That's a savings of almost ⅓ off the regular price. If you are not satisfied, cancel your subscription and keep the March issue free. Outside U.S., $14.00 per year, $22.00 for two years, U.S. funds.

You can subscribe for the next year for $10.00, but your best buy is a two year subscription with a free issue. Imagine the next nine issue (including March) for only $18.00. That's over 72 projects and enough technical articles to fill a good sized text book. Subscribe today. Your satisfaction is guaranteed 100% or your money will be refunded on unmailed copies.

THE AMERICAN WOODWORKER
P.O. Box 1408, Dept. W-2
Hendersonville, TN 37077-1408

JUST FOR KIDS

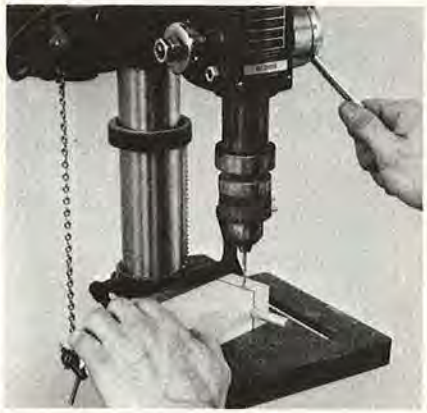
Continued from page 58

U.S.S. WOOD

boom (S), yardarms (T), and mast (U) to length.

7 Epoxy the barrels (N) in the turrets (I). Apply paraffin to each hull pin D and mount the turrets. (This lets the turrets swivel and allows you to "fire" port or starboard without having to change course.) Using a ½" drilling jig similar to the 1" jig just used, drill holes in O and P. Cut the drilled ends of P at 45°.

8 To build the jig shown below, drill the first hole the same size as the dowel being drilled, all the way through a piece of scrap. Drill the second hole perpendicular to the first, so it intersects the first hole in the exact center. Now, drill the perpendicular holes in the smokestack (K), mast (O), the bollards (Q), the crane shaft (R), boom (S), and yardarms (T). (You will need to tilt the drill press when drilling R.) Glue and install part S into R and T into K and O. Chamfer the tops of Q and glue them into the hull. Assemble and install the mast pieces (L, O, T, U).



9 Paint all parts as shown in the photo on page 58. (We wiped off the top deck right after painting to imitate the teak decks on real battleships.) When the paint has dried, glue the bridge supports (M) in place and glue the bridge (F) to the supports, ½" above the superstructure. Install the smokestacks (K), air vents (P), and crane assembly (S, R). ■

Design: Jim Zeller
Photograph: Hopkins Associates
Illustrations: Bill Zaun

Print this article

PAULOWNIA

the tree that traveled half-way around the world . . . then home again

In 1972, Japanese lumber buyers touring Virginia for wood to import spotted a very familiar-looking tree. This chance discovery of paulownia (*Paulownia tomentosa*), or "kiri" as it's called in Japan, sparked a boom that now keeps some lumber mills in the southeastern U.S. buzzing.

For centuries, Japanese woodworkers have prized their native paulownia for use in special furniture items and musical instruments. But reduced land availability for planting cut the supply. However, in Virginia, Tennessee, Kentucky, and Mississippi, where it was planted over a century ago as an ornamental, paulownia flourishes.

In its adopted land, paulownia often goes by the name of coffee wood, big leaf, blue bell, or princess tree. Mills pay landowners more for it than black walnut. In fact, during times of peak demand, buyers often scout with helicopters to locate prime specimens, since paulownia's bright violet blooms stand out amid the forest canopy.

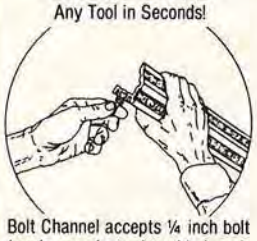
In Japan, U.S.-grown paulownia wood becomes chests like this one, musical instruments, and even paper-thin business cards for U.S. executives.

Demand for this valuable wood sags only after a major storm rakes the islands of Japan. Then the Japanese harvest their own supply of blown-down paulownia.

Why do the Japanese cherish this wood? Lighter in weight than poplar, paulownia has a lustrous and satiny look. Its close grain machines into airtight joints, an attribute that makes it perfect for use in the traditional multi-drawered chests called *tonsus*, in which the Japanese bride packs her dowry.

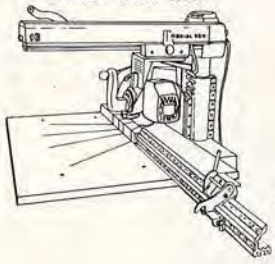
Some exported paulownia wood even returns to the U.S. from Japan—in the form of paper-thin veneers preferred by some American executives for business cards. ■

JIGFENCE™ Bolts to Any Tool in Seconds!

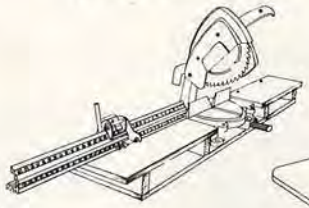


Bolt Channel accepts ¼ inch bolt heads anywhere along it's length for versatile attachment.

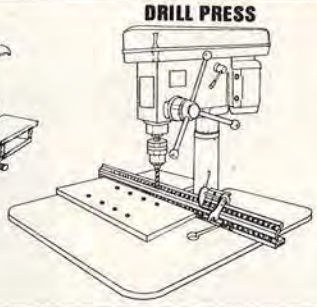
RADIAL ARM SAW



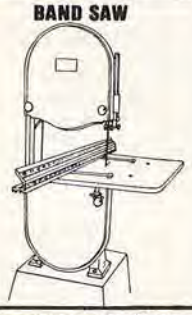
POWER MITER BOX

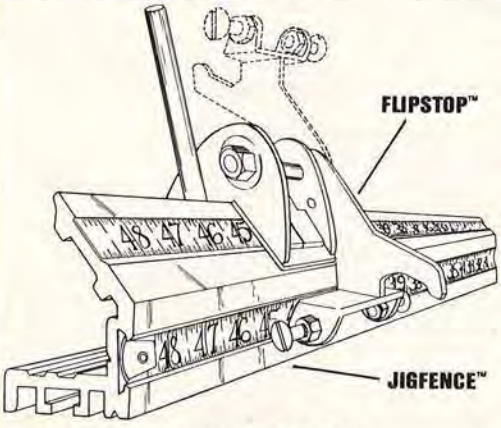


DRILL PRESS



BAND SAW





WHERE CAN YOU FIND A PRECISION FENCE GAGE SYSTEM THAT'S SUITABLE FOR INDUSTRIAL USE, VERSATILE ENOUGH TO FIT A WIDE VARIETY OF TOOLS, AND PRICED RIGHT FOR THE HOME CRAFTSMAN! HERE! Now for the first time you can buy **JIGFENCE™**, a heavy tempered aluminum fence, and **FLIPSTOP™**, a precision sliding fence gage designed for easy interchangeable use on a variety of common shop tools. **JIGFENCE™** is a rigid extrusion that holds two tapes, the upper fixed tape guides the **FLIPSTOP™** fence gage, the lower adjustable tape allows you to make direct measurements without the stop mechanism. A built in channel in the bottom of the fence accepts ¼ inch bolts (see detail above) so you can attach the fence to your tools in seconds. Complete instructions are supplied with each fence.

FLIPSTOP™ is the first dust free lever-action gage with fluorescent hairline pointer and retractable stop bar. Its made of 3/16 inch steel, tough enough for years of service – drop it on the floor, you won't hurt it! It locks in an instant with lever action, the smoothest you'll ever see, and the stop bar can be flipped out of the way when not needed. You can use multiple gages for production work to avoid re-setting measurements. Order today, we pay the freight – MONEYBACK GUARANTEE

MODELS AND PRICES

Model JF4	1-48" **JIGFENCE™**	$25.95
Model JF44	2-48" **JIGFENCE™**	$49.95
Model JF7	1-84" **JIGFENCE™**	$45.95
Model FSJ	**FLIPSTOP™** Fence Gage	$49.95

Each fence ordered is supplied with one stick on tape measure. Any ¾ in. tape refill is suitable for lower tape groove - use one from your shop, or order a 10 ft. refill from us. $5.95 ea

ORDERING INFORMATION

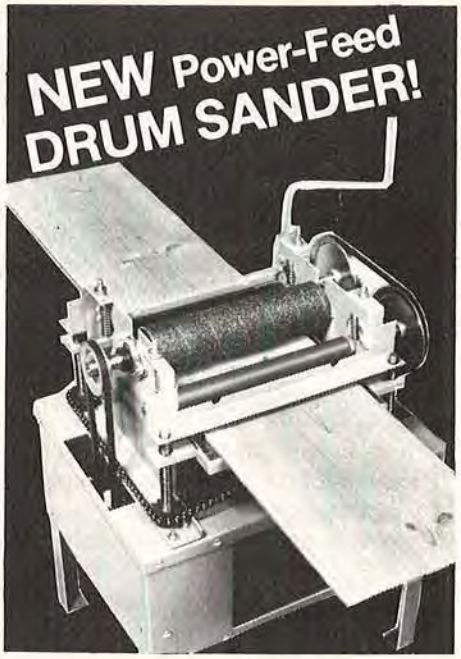
JIGFENCE™ and **FLIPSTOP™** are available at fine tool stores or by mail from:

AMERICAN DESIGN AND ENGINEERING INC.

648 Turin Ave. / So. St. Paul, MN 55075 / Phone 612-455-4243

Call days, evenings, weekends - Receive $2 discount on phone orders. Most orders shipped in 24 hours by UPS - Freight prepaid to your door. Pay by check, COD, Master Charge/Visa. Orders should arrive within 5 days - 48 states. Minnesota & Wisconsin residents add Sales Tax.

851



At last! A complete power-feed Drum Sander at an affordable price! Comes ready to use including hood, stand and motor!

**A FINISH SANDER . . .
A THICKNESS SANDER**

You can use this high tolerance machine for light dimensioning as well as the finest finish work. Because stock is power-fed at a uniform rate, you'll achieve results impossible to duplicate with hand methods or hand-held sanders. Dimensions remain exact — no more low spots, waves or cross grain marks!

IMPROVES RESULTS!

Use the Woodmaster to dimension and finish-sand cabinet pieces, resawn stock, paneling, grandfather clocks, toys, tabletops, knees, burls, crotches, and much, much more! You'll soon find it's one of the most valuable tools in your shop!

30-DAY FREE TRIAL!

Send for complete facts on how you can try the Woodmaster Power-Feed Drum Sander in your own shop for 30 days completely without risk! We'll also send you complete details on how you are fully protected by Woodmaster's One Full Year Limited Warranty. Easy Terms.

**Woodmaster Tools
2908 Oak
Dept. RW7
Kansas City, Missouri 64108**

Call Toll-Free 1(800) 824-7888 Oper. 642

**Woodmaster Tools
2908 Oak
Dept. RW7
Kansas City, Missouri 64108**

☐ **YES!** Please rush my FREE Information Kit and details on your 30-Day Free Trial Guarantee.

Name _____

Address _____

City _____ State _____ Zip _____

BACK-TO-BASICS sawhorses

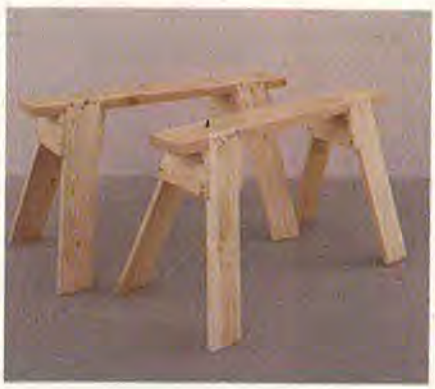
Looking for helpers in your shop that are two feet tall and have four legs? Build pairs of these sturdy sawhorses any size you want and get the help you need. Here's how:

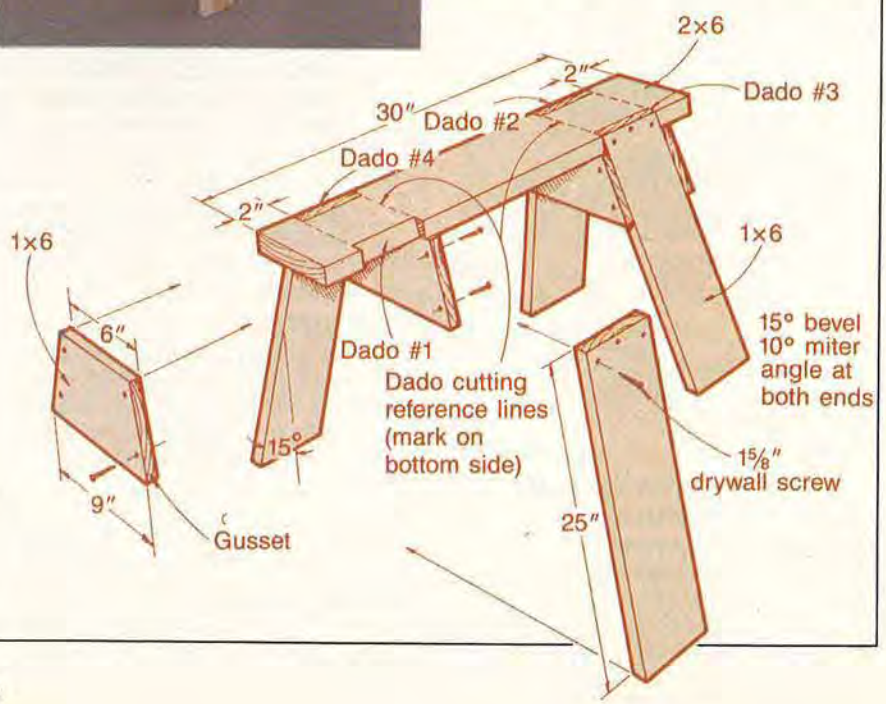
1 To build a 30″-long × 24″-high sawhorse, begin by crosscutting a 30″ top and four 30″ legs. (We used a scrap construction-grade 2×6 for the top and 1×6s for the legs.)

2 Tilt the table saw blade to 15° and bevel one edge of a 12″-long scrap 2×3. Screw it to the miter gauge as shown in the Side View. Remove the saw blade and insert a dado blade. Set the blade at 0° (parallel with the miter gauge grooves), and raise it ¾″ above the surface of the table.

3 To cut the dadoes in the top beam, position the miter gauge in the slot to the right of the blade and set the miter gauge 10° right of center as shown in the Compound Angle Dado Cutting Drawing. Before cutting, mark reference lines for the location of the four dadoes on the bottom side of the 2×6, then mark Xs on waste stock with a pencil to make sure you cut on the correct side of the lines. With the 2×6 positioned against the beveled fence, cut dado no. 1, then flip the 2×6 end for end and cut dado no. 2. Now, move the miter gauge to the left side of the blade and set the miter gauge to 10° left of center and cut dadoes 3 and 4 as you did 1 and 2.

4 Remove the scrap 2×3 from the miter gauge and replace the dado blade with a regular ⅛″ blade. Set the blade at 15° left of center and with the miter gauge 10° right of center and on the left-hand side of



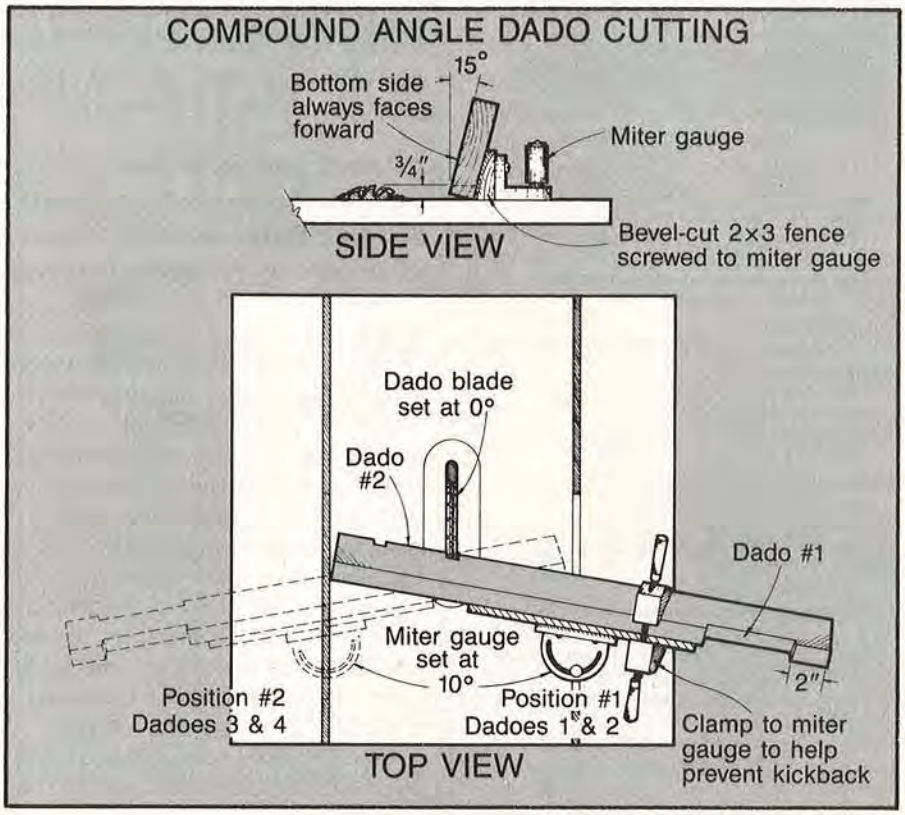


the blade, cut one end of each leg. (If your saw blade tilts right from center, you will need to change the miter gauge setting to 10° left of center and make the first cut with the miter gauge on the right-hand side of the blade.) Keeping the settings the same, move the miter gauge to the opposite side of the blade, and cut the remaining ends to a finished length of 25".

5 Attach the legs to the top, using 1⅝" drywall screws. (We used three screws for each leg.) Do not use glue on the assembly, since you may need to replace a part if it gets cut accidentally.

6 To make the four gussets, return the blade to 0° and set the miter gauge at 15°. Crosscut the gussets to the dimensions shown in the exploded-view drawing and attach them with 1⅝" drywall screws. If desired, lightly belt-sand all the joinery flush. ■

Photograph: Bob Calmer
Illustrations: Bill Zaun



During This Publicity Campaign ...

Famous **POWER DRIVER**

AS SEEN ON TV

Only $2 With This Ad

One MillionTo Be Sold

One million famous Power Drivers will be sold by the New York importing firm of the Direct Connection as part of a nation - wide publicity campaign to the first one million persons who write to the company address below.

Quality Tool At A Fraction Of The Price... A True Value!

These are the same famous Power Drivers that have been nationally advertised on TV and through leading publications for up to 10 times the price. With the revolutionary Power Driver there's no more painful slipping and scratching or twisting your wrist off. Easily attaches to your power drill to effortlessly drive screws into the hardest of woods ... even concrete! Comes complete with 4 interchangeable heads to fit any size screw. With the easy to use depth selector, just choose your setting and the screw is released at the depth you've selected. Also works in reverse to remove screws. Its super fast and incredibly easy. Makes a great gift.

Not Sold In Any Store

These famous Power Drivers will not be sold by this company in any store. To obtain one at this price, you must mail this original ad to the company address below.

Money-Back Guarantee

Each Power Driver carries a full moneyback guarantee and will be replaced free of charge if it ever fails to function.

Sorry Limited Offer

There is a limit of 2 Power Drivers per address at this price, however requests that are mailed early enough ... by Aug. 31, 1985 are permitted to order up to 6 Power Drivers. To obtain your Power Driver, mail this original printed ad, together with your name and address and $2 for each Power Driver requested. Add just $2 postage and handling no matter how many Power Drivers you are requesting.

MAIL TO: the DiRECT CONNECTiON
Dept. 851, 37 W 26 St, New York, NY 10010

MAKING WHIRLIGIGS & OTHER WIND TOYS

Exciting Action Toys You Can Make!

$8.95

Not made to just sit on a shelf, these are spectacular fun toys that will give adults and kids alike hours of enjoyment. And they're not hard to make!

In this practical instruction book Sharon Pierce tells you everything you need to know to make and use a fabulous array of wooden whirligigs (many of them are based on famous museum pieces) and other toys that move in the wind.

You'll find out how to make three different kinds of whirligig arms—solid paddles, attached paddles and propellers (you need two of these for each toy).

For each project, the book shows:

- the materials and tools you need
- the pattern to follow
- how to cut and drill the softwood
- how to sand it in different ways
- how to test it to make sure it works
- how to paint (including mixing colors)
- how to assemble it
- a photo of the finished project

And the toys you make are simple, humorous and fun to make—all 26 of them! You'll find patterns for such whirligigs as a simple soldier, a mermaid, penguin, Santa and unicorn, and such wind toys as windmills, racing jockeys and even a tireless fellow milking an endlessly patient cow!

Once you learn the basic principles, you'll be able to go on and create your own original wind-powered toys. They're easy and fun to make (you'll get a special sense of satisfaction when they MOVE!) and they make great gifts. **Order now! Send $8.95 Free Freight, Sterling Publishing Co., Inc. Dept WD5,** Two Park Ave., New York, NY 10016

If Your Grandfather Didn't Leave You His...

DELTA

Free Ripfence Free Worklight $93.50 Value

For over 40 years now, the most popular bandsaw made. For toymaking to furniture making, whether you're resawing, cutting curves or ripping, a bandsaw gives you the most flexibility. Sturdy cast iron components make this machine stable and smooth running. Height capacity is 6-1/4". Large 14" square table tilts 45 degrees right and 10 degrees left and is machined to accept standard Delta 3/8" x 3/4" miter gauge. Weighs 224 lbs. with motor and stand. The 28-858 flexible neck lamp uses standard appliance bulbs. The 28-845 ripfence package comes with 32" bars. Motor is 1/2 HP, ball bearing, 1725 RPM.

(Remember, we pay the freight.)

28-243 *Delta 14" Bandsaw with Motor, Stand, FREE Worklight and Ripfence*

List $808.50/**SALE $599.00** ***delivered.***

Woodworker's Supply

(OF NEW MEXICO)

5604 Alameda, NE • Dept. WO

Albuquerque, NM 87113

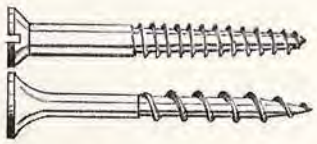
Toll-Free: 1-800-645-9292 VISA/MC

NEW-GENERATION SCREWS FOR NOW-GENERATION MATERIALS

As more and more home woodworkers adapt their cabinet and furniture projects to composition materials, they find that tried-and-true fasteners don't always do the job. Here's a rundown of some new fasteners that will.

Wood screws work well in wood. They always have. But they don't always do a very good job in new "composite" wood panels made of chips, sawdust, shavings, and other particles. Traditional wood screw thread designs, and even those of the alternative sheet metal-type screw, tend to chew up the particles rather than groove them for holding power. Voids or hollow areas in the composition stock cause the close threads to lose part of their grip.

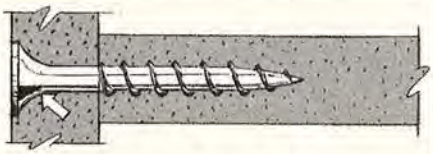
The new-type screws, first developed for particleboards used in the contract furniture industry, feature special angled threads spaced widely apart, as shown contrasted with normal wood screw threads in the illustration below. When driven into the material, the extreme angle of



Specially angled and wider spaced threads of the particleboard screw, bottom, give it greater holding power than the typical wood screw, top.

the thread doesn't disrupt the particles, and the wider spacing allows more of the particles to remain between turns. These *Grippit* screws create ledges in the sheet goods, which allows them to be torqued down without splitting the material. And unlike older designs, Grippits can be removed and reset several times in the same hole and still hold. Drilling pilot holes isn't even necessary—a sharp point configuration makes them self-tapping.

Sinkers are another type of particleboard screw. In addition to their specially angled and spaced thread design, they offer the bonus of automatic countersinking. Nibs, or protrusions, on the underside of the head, shown in the drawing below, draw the screw flush with,

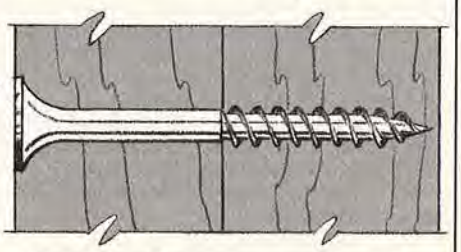


Sinkers have nibs under the head which draw it flush with the surface automatically as you drive it in.

or slightly below, the surface as you drive it in.

Modern fasteners for traditional woods

To eliminate stripping wood from the hole, a problem with fasteners having many threads to the inch, a *softwood framing screw* is available with widely spaced, double threads. Rather than one lead thread spiraling off the point, the "twinfast" design has two leads coming off an exceptionally sharp point for fast entry and increased holding strength. With a flat, bugle-shaped head and a deep drive slot, this screw can be torqued down flush. As illustrated, only the lower half of the softwood framing screw has



The unthreaded portion of the softwood framing screw is drawn through by the threads in the shank for less strain on the material.

Continued on page 87

PICNIC PATIO TABLE PLAN

Imagine if you will, this exclusive piece of art made of 2×4's! A functional picnic patio table. Everyone seated is in visual and voice contact. Octagon seats 8 adults. Lazy susan, umbrella holder. 7'1" across. Fully illustrated for cutting, assembling plus a material list. Patented. $10.00 check or money order. Money Back Guarantee.

THOM'S, INC. Dept. 2
Route 1 South, Box 2450
Laurel, Montana 59044

DO YOU USE OR COLLECT FINE HAND TOOLS?

ANTIQUE — OBSOLETE — MODERN

IF SO,

YOU SHOULD BE READING

THE FINE TOOL JOURNAL

PUBLISHED 10 TIMES ANNUALLY
1 Year Subscription—$10.00. Sample, $1.50

REMIT TO:
THE FINE TOOL JOURNAL
RD #2 — Dept. W85
Poultney, VT 05764

HUMFREY'S FOR
EXCALIBUR II

SUMMER SALE!
MENTION THIS AD WHEN YOU ORDER.
SAVE $50.
(Sale Ends August 31/85)

EXCALIBUR II PRECISION SCROLL SAW

SHIPPED FREIGHT COLLECT
SUMMER SALE
$445. U.S.*
~~$495.~~ U.S.*
NO OTHER CHARGES
*Electrics extra

- 1400, 800 & 400 Strokes/PM
- 19" throat, up to 2" thick
- Accepts all 5" blades
- Table tilts 45° left & right
- Cuts wood, plastics, metals etc.

HUMFREY'S ORDER PHONE IN THE U.S. CALL TOLL FREE
1-800-387-9789

J. Philip Humfrey International
3241 Kennedy Road, Unit 7 Department WM 7/8b
Scarborough, Ontario M1V 2J9 (416) 293-8624

Please rush me details of the EXCALIBUR II Precision Scroll Saw.

Name _____
Address _____
City _____ State _____ Zip _____

---

101 GIFT & NOVELTY PATTERNS

This wonderful packet contains 101 FULL SIZE PATTERNS of Gifts, Novelties, Lawn Figures, Bird Houses, Shelves, Action Windmills, Alphabets, and many more things. Just trace and saw out. Plus "Make Money Jig Sawing". Only $7.00 Prepaid 1st Class for this big packet.

MASTERCRAFT PLANS WEST, DEPT. 45H
P.O. Box 625, Redmond, WA 98073

---

30 BIRDHOUSES
·FULL SIZE PATTERNS·

Attractive new bird houses and feeders. Expertly designed to attract Wrens, Martins, Robins, etc. Easily made. Full size patterns and directions. Only $7.00. Prepaid 1st Class.

MASTERCRAFT PLANS WEST, DEPT. 416H
P.O. Box 625, Redmond, WA 98073

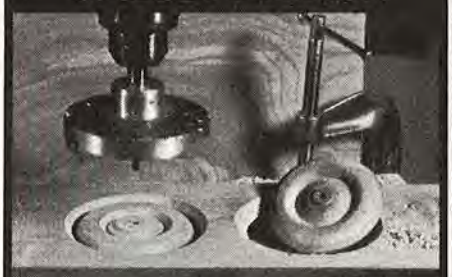
Create A Classic

Full size patterns for Packard Le Baron and 1929 Chevy Truck, plus a catalog of over 100 wooden toy patterns, wooden wheels, axle pegs, people, and other hardwood turnings.

Send check or money order for $10.00 for both patterns and catalog, or $1.50 for catalog.

TOY DESIGNS - Dept. BW785, Box 441
Newton, Iowa 50208

WHEEL-RIGHT Wheel Maker



Never before possible a professional wheel maker that allows you to quickly mass produce detailed quality wooden wheels at a low low cost. Also turn out Rosettes and YoYo's.
$59.95 plus $2.00 shipping and handling

The Tool Company
1306-G South Commercial
P.O. Box 629 Dept. DHG-4
Harrisonville, MO 64701
(816) 884-2679
Mo. Res. add 5.625% Sales Tax

Wood Moisture Meter
· Avoid Moisture Problems
· Protect your Masterpiece

Pocket-Size
MINI LIGNO
only
$110
Incl. Case, Batteries, and Pins for 3/16" and 7/16" Measuring Depth. Size: 1"x 2¾"x 5½" Range: 6%, 7%, -.,20%

also from Lignomat:
MINI-LIGNO E
Range: 6%, 7%, . . . ,36%

Easy-to-use, sturdy instruments for the professional woodworker or serious hobbyist. Measures moisture in lumber, veneer, fiberboards. Ask for free catalog on the complete line of moisture meters and accessories. we can show you how to use a moisture meter efficiently.

Lignomat USA Ltd. Tel: 800-227-2105
503-257-8957
P.O. Box 30145 Dept. BH Portland, OR 97230

THE BEST PROJECTS START WITH ARTISTRY IN VENEERS!

Fine veneers can be used to create original pieces. Artistry in Veneers provides you with a complete line of quality products at affordable prices.

• Veneers • Tool Kits • Stains • Marquetry • Cane • Dollhouse Kits • Fancy Crotch, Swirls, Butts and Burls • Furniture and Toy Plans • Decorative Inlays and Borders • Wood Ship Models • Waterfowl Carving Kits • Finishing Materials and Accessories • Craft and Hobby Tools • Glues and Adhesives • Wood Products

PROFESSIONAL SERVICES AVAILABLE.
SPECIAL DISCOUNTS FOR INSTITUTIONAL ORDERS.
SEND $1 FOR OUR WOODWORKER'S CATALOG
(Deductible from your first order.)

ARTISTRY IN VENEERS, INC.
450 Oak Tree Avenue, South Plainfield, NJ 07080
201-668-1430

SIGNCARVING *IS PROFITABLE!*

And it's easy, if you use the Marlin Woodcarvers and accessories. You can carve signs quickly at home or at swap meets. The machines do the work, the operator has the fun and profits.
No Special Training Is Required!

SEND $1.00 FOR OUR BROCHURE AND PRICE LIST, AND BEGIN TO PLAN YOUR FULL OR PART-TIME BUSINESS.

Fine Carving Machines Since 1971

MARLIN INDUSTRIES
1911 OBISPO AVE., DEPT. D508
LONG BEACH, CA 90804
(213) 498-0767

KILN DRY YOUR OWN LUMBER

nyle corporation

the nation's largest manufacturer of dehumidification dry kilns is now offering small 500 to 10,000 board feet drying systems.

- ★ Made completely in the USA
- ★ The leader of the industry
- ★ Offering excellent warrantees
- ★ Expert consultation and service

nyle DRY KILN SYSTEMS

P. O. Box 80064
Indianapolis, Indiana 46260
Telephone 317-843-1313

Let's close the book on forest fires.

Ad Council *A Public Service of This Magazine & The Advertising Council*

PIN ROUTER

Speed and Precision at a Small Shop Price.

With the Award Winning Onsrud Inverted Router, templates are so simple it is economical to reproduce one part or hundreds.

Call or write for our free literature today.

C.R. ONSRUD INC.

MODEL 2003

(704) 528-4528
P.O. Box 416W, Troutman, N.C. 28166

WOOD WORLD

IN ILLINOIS

1719 Chestnut Ave.
Glenview, IL 60025
(312) 729-9663

3218 Wireton Rd.
Blue Island, IL
(312) 389-7667

IN ARIZONA

1705 W. University
Tempe, AZ 85281
(602) 966-2444

DOMESTIC & EXOTIC HARDWOODS
HARDWOOD PLYWOOD—VENEERS

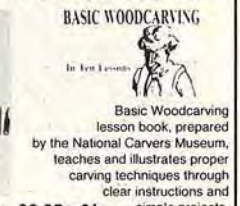
You Select Your Own Lumber ▪ Custom Cutting & Milling

WOODWORKING & CARVING CLASSES

WOODWORKERS AMATEUR & PROFESSIONAL

Hardwood Mouldings
▪
INCA Power Tools
▪
Books & Magazines
▪
Hand Tools
▪
Watco Stains & Finishes
▪
Freud
▪
Router Bits & Sawblades

A Complete New Combination Kit for Whittling and Carving By WARREN TOOL CO., INC.



Basic Woodcarving lesson book, prepared by the National Carvers Museum, teaches and illustrates proper carving techniques through clear instructions and simple projects.

#COMBI-TCE $79.95 + $2.25 p&h

OUR FINEST COMBINATION WHITTLERS AND CARVERS KIT

Contents: 1 Redwood Box, 1-#CWH-R Rosewood handle, 1 #L-Palm Walnut handle, (one each) #PTV-1, #LBG, #SBG, #PTV-2, #STC, #STG, #SFTG, #SKU, Gouges, 1-#LD2 (Large Blade), #6SBL (6-Small Blades), 1-Leather Strop Block, 1-Abrasive Paper Block, 1-Instruction Book. All blades and gouges sold in their own plastic storage tubes to avoid damage to these honed ready-to-use tools.

WARREN TOOL CO, INC.
Rt. 1, Box 14A-W, Rhinebeck, NY 12572
Catalog 60¢ FREE with order • (914) 876-7817
N.Y. residents add 5.25% sales tax

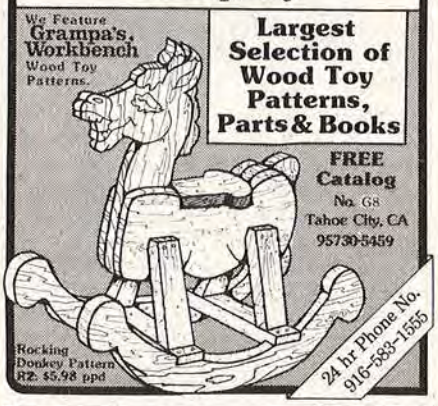
HORTON BRASSES

Nooks Hill Road, P.O. Box 120J
Cromwell, CT 06416 (203) 635-4400

HORTON BRASSES are authentic copies of 17th, 18th, 19th & early 20th century pulls

Mfrs. of Cabinet & Furniture Hardware for Homes & Antiques.
Send $2.00 for a Catalogue.

The Toymaker Supply Company



FREE

¼" CARBIDE-TIPPED STRAIGHT ROUTER BIT WHEN YOU ORDER THIS SET OF SIX TOP-QUALITY ONE-PIECE CARBIDE-TIPPED ROUTER BITS IN THE MOST USEFUL SIZES AND SHAPES.

¼" SHANK SET **$64.95** PPD.
½" SHANK SET **$69.95** PPD.

AND WHAT'S MORE WE INCLUDE AN EXTRA BEARING SO THE ROUNDOVER MAY BE USED FOR BEADING. ORDER BY PHONE WITH VISA/MC OR SEND MO, CHECK, VISA/MC NUMBER, EXP. DATE, PHONE NUMBER. CATALOG $1.

Satisfaction Guaranteed or your Money Back.
Call 206-236-0272 or write:

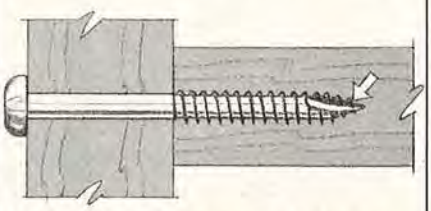
CASCADE PRECISION TOOL CO., INC.
P.O. BOX 848, MERCER ISLAND, WA 98040.

Continued from page 84

NEW-GENERATION SCREWS

threads. The unthreaded portion is drawn through by the threads at the bottom of the shaft, so no unnecessary strain is put on the wood as the two parts are drawn together.

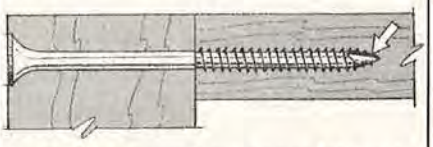
Hardwood framing screws, though much like their softwood cousins mentioned earlier, have auger points, called *Type 17,* that makes them wood-borers. The auger point extrudes wood from the side of the hole as it's driven, storing particles in a special reservoir rather than building them up around the threads. (See below.)



Auger points on hardwood framing screws bore their way in, storing wood particles as they go.

No nuts and bolts for cabinets

Used in joining two cabinets, *assembly screws* have an auger bit and threads. As shown below, the screw cuts grooves in the wood during the fastening of the first cabinet. Once into the second unit, it continues boring and draws the unthreaded portion in its path and the two parts together.



Assembly screws have auger bits and unthreaded sections that draw two cabinets together faster than traditional nuts and bolts.

Unfortunately, these new-generation screws aren't as yet widely available, but you can order them direct from a manufacturer specializing in this product: Equality Screw Company, Inc., P.O. Box 1645, El Cajon, CA 92022. ■.

This VET Did It – and YOU Can Do It Too!

"War injuries left me badly handicapped, but now I'm a financial success as a Locksmith, thanks to your training. Besides, the work is fascinating. If I can do it anybody can." — Glen Johnson, Larned, Kan.

Make Up to $26.00 an Hour — even while learning!

Train FAST at Home!

Be a LOCKSMITH!

If you enjoy fixing things, you're a "natural" to make hundreds of EXTRA DOLLARS a year in the fascinating business of Locksmithing. Rising crime has increased demand for service a thousandfold. **Yet there's only one Locksmith for every 17,000 people!**

COLLECT CASH PROFITS ALMOST AT ONCE!

You're "in business" ready to make $10 to $26.00 an hour a few days after you begin Foley-Belsaw's shortcut training. Easy illustrated lessons complete with ALL practice equipment **PLUS**

- **ALL TOOLS YOURS TO KEEP**
- **KEY MACHINE YOURS TO KEEP**
- **EXPERT PERSONAL ASSISTANCE**
- **BUSINESS-BUILDING HELP**

enable you to get your share of this always-profitable business. Hundreds we've trained are doing it. So can YOU.

MAIL COUPON to discover how Locksmithing can keep the extra money coming in during spare time — or in your own full-time business. Ideal for retirement—good jobs, too.

FOLEY-BELSAW INSTITUTE, 10696 Field Bldg. Kansas City, Mo. 64111

FREE

N. Hunt, Wilmington, Del.—"I make $50 a week extra."

R. Davis, St. Louis, Mo.—"I cleared $110 last Saturday."

Ed Boyle, Pittsburgh, Pa.—"My business going at top speed. I'm moving to bigger quarters."

MAIL THIS COUPON • NO SALESMAN WILL CALL

THIS DO-ALL PRO

KEY MACHINE YOURS TO KEEP!

FREE

Can add $50 to $100 a week to your income . . . and doesn't cost you a penny extra!

FOLEY-BELSAW INSTITUTE, 10696 Field Bldg. Kansas City, Mo. 64111

FOLEY BELSAW

Rush **FREE** book, "Keys to your Future."

Name_____

Address_____

City_____ State_____ Zip_____

Have a problem with your subscription?

We want to solve it to your complete satisfaction, and we want to do it fast. Please write to: Robert Austin, *Better Homes and Gardens® WOOD,* P.O. Box 10628, Des Moines, Iowa 50336.

You can help us by attaching your magazine label here, or copy your name and address as it appears on your label. Send this along with your correspondence.

Name

Address Apt. #

City State Zip

Moving?

Simply attach the mailing label from this magazine and write in your new address below. (Please allow 4-8 weeks.)

Your New Address Goes Here

Name

Address Apt. #

City

State Zip

Subscription Rate:

6 issues — 1 year — $15. Add $6 for Canadian or foreign postage.

☐ Renewal ☐ New Order

Need Faster Service?

Do us a favor... it is better to write us concerning your problem and include the magazine label. Also, address changes are handled more efficiently by mail. However, should you need to reach us quickly the following toll-free number is available:

800-247-2504

Better Homes and Gardens® WOOD

P.O. Box 10628 • Des Moines, Iowa 50336

Information

Print this article

WORTH WRITING FOR

You can get useful ideas and product information by mail. Use the coupon in this section to order your choice of literature listed below.

SCROLL SAW AND LATHE INFORMATION — More than 20 pages of information, including full-color photos, on HEGNER precision scroll saws, HEGNER lathes, and HEGNER duplicators. Find out why these machines are considered state of the art, and what to look for when shopping for scroll saws or lathes. AMI, LTD. $1.00. *Circle No. 1.*

WOODWORKING PROFESSIONALS ONLY — Now save 50% on machinery, 70% on operating costs! How? By using the world's finest production quality universal machine. Commercial durability, utmost precision, set-up in seconds. No other tool combines usable capabilities like FELDER. Thousands sold all over the world. Now available in America through AMI. Send for brochure. AMI LTD. $1.00. *Circle No. 2.*

FOR AMERICAN-MADE TOP QUALITY WOODWORKING EQUIPMENT — Send for our catalogs on all the top American-made machinery like Powermatic and Delta. We also carry hard to find decorative hardware like Baldwin and Slage. ADDKISON HARDWARE. $2.00. *Circle No. 15.*

HOW-TO-CLAMP-IT CATALOG — Illustrated catalog describes over 40 different styles of genuine "Jorgensen" and "Pony" hand clamps, including clamp selection guide, working advantages, and do-it-yourself project applications. ADJUSTABLE CLAMP CO. Free. *Circle No. 20.*

MODERN HARDWARE FOR CRAFTSMEN — European concealed hinges for wood and glass doors are our specialty. No-bore glass door hinges plus everything else for your stereo cabinet from casters to lid hinges. Make your kitchen cabinets more functional with wire shelves, baskets, and slides. Build a computer cabinet using our TV extension slides. No minimum order requirements and our prices are low. ALLEN SPECIALTY HARDWARE. $1.00. *Circle No. 30.*

POWER MITER SAW OWNERS — Send for the free information kit describing the Sawhelper™ Miter Fence System. Three styles of sawhelpers are available. Choose from stationary fences or portable fences in bench top or free-standing models. Portable units set up in 60 seconds, then fold for compact storage or transport. Many accessories available. AMERICAN DESIGN AND ENGINEERING INC. Free. *Circle No. 40.*

THE AMERICAN WOODWORKER MAGAZINE — offers projects on beginning, intermediate, and advanced levels in each issue. Also included are in-depth instructional articles on all phases of woodworking, plus general interest articles. We will offer plans for jigs and fixtures for your shop. A one year subscription is only $10.00 (inside U.S.). Send for our brochure giving complete details plus a coupon good for ⅓ off the regular price. THE AMERICAN WOODWORKER. $1.00. *Circle No. 45.*

TOOL CATALOG — Available from Anglo American Enterprises, the world famous Recod Marples Tool Catalog featuring the finest woodcrafting tools available. Send for catalog and price list. ANGLO AMERICAN ENTERPRISES CORP. $2.00. *Circle No. 50.*

WOODWORKERS — Artistry in Veneers' catalog features many products. Among them are veneers, inlays, marquetry kits, carving sets, dollhouses, boats, ducks, clocks, wood finishes, and tools. Our library of "how-to" books and professional services can broaden your knowledge of fascinating hobbies in wood. Send for our woodworker's catalog. Price of the catalog is deducted from your first order. ARTISTRY IN VENEERS, INC. $1.00. *Circle No. 65.*

DISCOVER VENEER — Artistry in Veneers' do-it-yourself guide to veneering shows you how simple this craft really is to master. Our color brochure identifies the most popular species of veneer and educates you on veneer matching, taping, and gluing. Send for your introductory brochure. ARTISTRY IN VENEERS, INC. 50¢. *Circle No. 66.*

ALL OAK SPIRAL STAIR KITS — Finely crafted all oak spirals designed to assemble in 1 day. Other all wood models from $1295 complete. Send for color brochure and price list. AULSTAIR. $1.00. *Circle No. 77.*

INDUSTRIAL DUTY & PORTABLE AIR COMPRESSORS — Complete listings for Ingersol Rand air compressors. Industrial duty, 2 stage ASME approved Energair models for under $900. Sizes from 60 to 120 gallons available with one year warranty. Also complete details on portables with 20 and 30 gallon capacities. ASME approved tanks. Priced under $400. Send for literature. AVIATION/INDUSTRIAL SUPPLY COMPANY. Free. *Circle No. 78.*

CATALOG OF PLANS AND KITS — A selection of functional projects, unique gifts, and decorative pieces for home or office. Included are a sandpile scooper, super bunk beds, miniature two-story outhouse, birthday calendar, and many more. See our ad elsewhere in this issue. BALLART DESIGN. $1.00. (Refundable) *Circle No. 100.*

SHIP MODEL KITS — Fully illustrated 32-page catalog of scale ship model kits from America's oldest model ship company. Build a beautiful museum quality model ship with the simplest tools and average skills. BLUEJACKET SHIP CRAFTERS. $2.00. *Circle No. 130.*

BOOS BUTCHER BLOCK FURNITURE — Full-color literature featuring Butcher Block tables and chairs and gourmet items including tea carts, microwave oven tables, hostess carts, Butcher Block and cutting boards. JOHN BOOS & CO. $1.00. *Circle No. 140.*

FREUD HAND TOOL CATALOG — An exciting new line of precision hand tools. These tools reflect the fine quality of craftsmanship, durability, and performance that you have always associated with Freud products. From choice boxwood to chrome vanadium steel, these tools exceed all expectations of precision woodworking instruments. BRADY SUPPLY CORP. $1.00. *Circle No. 145.*

EXTRAORDINARILY BEAUTIFUL HANDTOOLS — Solid brass and exotic rosewood handtools built in America by Bridge City Tool Works. Each precision tool featured in this 4-color catalog is manufactured to very demanding tolerances. Each is handmade and flawlessly finished. Bridge City Tool Works makes tools for people who care, the discerning craftsman. Send for 1985/86 catalog. BRIDGE CITY TOOL WORKS. $1.00. *Circle No. 147.*

CANE AND BASKET SUPPLIES — Every item used in caning and basketry is pictured in this new catalog for hobbyists and others interested in caning, rushing, etc., for either fun or profit. CANE & BASKET SUPPLY CO. $1.00. *Circle No. 230.*

CARBIDE TIPPED ROUTER BITS AND SHAPER CUTTERS — Over 200 router bits and shaper cutters displayed in catalog featuring 6 piece cabinet sets, 3 piece ½ in.shank router bit panel raising system, and 3 wing industrial shaper cutters. Shaper cutters available in ½ in. through 1-¼ in. bore with bushings. Router bits offered in ¼ in. and ½ in. shank. Products can also be manufactured according to user specification and design. CASCADE PRECISION TOOL CO. $1.00. *Circle No. 245.*

CLOCK MOVEMENTS CATALOG — The 55-page catalog contains over fifteen different quartz clock movements, including pendulum, strike, and chime movements. Also shown are dials, hands, numerals, and accessories. It features movements made in Japan by the world's largest producer of quartz timepieces. CAS-KER CO. $1.00. *Circle No. 250.*

MAKE WOOD TOYS AND PROJECTS — Hundreds of plans, kits, colored and unfinished hardwood parts for all types of toy, craft, and furniture projects (Colonial, Shaker, Primitive, and Modern.) For novice to experienced woodworkers. Send for beautifully illustrated color catalog. CHERRY TREE TOYS INC. $1.00. *Circle No. 260.*

CONOVER'S UNIQUE HANDMADE TOOLS — 16-page catalog of unique reproduction and hard-to-find tools, such as miniature brass palm planes, wood threading tools, and spokeshaves. These high quality tools are made by the Conover family in Parkman, Ohio, and by dealing direct with the manufacturer you save. CONOVER WOODCRAFT SPECIALTIES, INC. $1.00. *Circle No. 265.*

TURN BED/PORCH POSTS — Conover Woodcraft's unique, super high quality lathe has unlimited center length. It can turn porch posts or set up as a bowl lathe — your choice. Manufactured in Conover's Parkman, Ohio factory, this lathe has heavy cast-iron construction with Timken roller bearings and 16 in. swing. Suitable for heavy faceplate work, metal spinning, or spindle turning. 16-page catalog. CONOVER WOODCRAFT SPECIALITIES, INC. $1.00. *Circle No. 266.*

WOODWORKERS TOOLS AND MATERIALS — 116-page catalog offers fine hardwoods, veneers, inlays, picture molding, wood finishes, carving blocks, cabinet hardware, and cane. Specialty woodworking tools, shop equipment, plans, instruction books. ALBERT CONSTANTINE AND SON INC. $1.00. *Circle No. 270.*

BUILD HEIRLOOM CLOCKS — Now create beautiful heirloom quality clocks right in your own home. Choose from magnificent chiming grandfather clocks to charming wall clocks. 32-page catalog also offers a selection of music boxes, music movements, traditional barometers, and a huge variety of quartz movements and dials for custom clock building. Satisfaction guaranteed. CRAFT PRODUCTS CO. Free. *Circle No. 273.*

WOODTURNERS — Craft Supplies offers the finest selection of both English and American tools available. We feature Sarkey, Henry Taylor, and Precision Machine tools and accessories. Choose from a complete line of figured woods, chucks, Harrison lathes, kits, and one-of-a-kind items. Send for our 48-page catalog and Dale Nish workshop information. Price of catalog refunded with order. CRAFT SUPPLIES USA. $2.00. *Circle No. 274.*

WOODWORKERS! HELP CELEBRATE OUR 55TH YEAR OF SERVICE — Send for our new 148-page Craftsman 1985 catalog. 42 varieties of choice hardwoods 1/64- in. to 4-in. thickness. Fine hardwood veneers, tools, moldings, trim, marquetry inlays, upholstery and lamp supplies, finishes, clock kits, and hard-to-find hardware. 4,000-plus items for your projects. CRAFTSMAN WOOD SERVICE CO. $1.00. *Circle No. 275.*

OAK FURNITURE AND ACCESSORY KIT CATALOG — Catalog features a full range of top quality oak furniture kits and accessory items plus unfinished, assembled furniture. Featured items include clocks and music boxes, roll top desks, tables, chairs, bookcases, plus many more. Send for complete full-color catalog and enjoy true woodcrafting pleasure. CRAFTSMAN'S CORNER. Free. *Circle No. 278.*

WOOD CATALOGS — Full-color catalogs picture and describe a complete line of solid wood (oak or poplar) Victorian millwork, bars, and accessory carvings. Line includes fretwork, corbles, brackets, spandrel, medallions, Victorian ceilings, mouldings, carvings, appliques, gazebos, bars, backbars, and bar treatments. 36 pages. Many typical installations illustrated. CUMBERLAND WOODCRAFT CO. $3.75. *Circle No. 295.*

TO ORDER THESE BOOKLETS, USE COUPON ON PAGE 100

Full-Size TRADITIONAL ROCKING HORSE PLAN

Bring back the magic of childhood using our full-size plan for the Traditional Rocking Horse. Easy to build—body, legs and head are shaped using files. Rockers are curved for maximum action and shaped for desirable safety. Use pine or any available hardwood—paint to resemble live pony. Tomorrow's heirloom today!

Plan No. 121 $10.75

CATALOG
180 diff., full-size prof. furniture plans–$2.00 (catalog free with order)

FURNITURE DESIGNS, Dept. BZ75
1425 Sherman Ave., Evanston, IL 60201

JWC*

*The JAPAN WOODWORKER'S Catalog is loaded with the best tools you can get your hands on. Unlike other suppliers, at the Japan Woodworker, Japanese woodworking tools are not a sideline. We are the original supplier of these tools to the Western woodworker. In our catalog you will find a complete selection of Japanese tools for the woodcarver, carpenter, and cabinetmaker. For those of you who want the finest tools money can buy, our "Tools as Art" section will be of particular interest. Send $1.50 for our catalog and supplements during the next two years.

THE JAPAN WOODWORKER 1731 Clement Ave., Alameda, CA 94501 / Phone (415)521-1810 W

WOOD PARTS WOODWORKS

Catalog $1.00 1st Class/Free 3rd Class
WOODWORKS
P.O. Box 14507-B7 Ft. Worth, TX 76117
817-281-4447

Sleeveless DRUM SANDER

NO PRE-MADE SLEEVES TO BUY

ECONOMICAL - Simply cut sandpaper from standard size sheets
UNIQUE way to holding sandpaper to drum. Twist of key tightens
SPONGE RUBBER backing insures long wear of sandpaper

USE ON:
Drill Press
Smal Motor
Lathe
Combo-Tools
Radial Saw
¼" Drill

1" x 3" long	$13.50
2" x 3" long	$14.50
2½" x 3" long	$15.25
3" x 3" long	$16.50

1" and 2½" ABOVE $26.75
ABOVE 4 DRUMS $53.50

¾" x 3" long	$14.50
2½" x 4½" long	$21.00
3" x 4½" long	$22.50
2½" x 6" long	$25.50
3" x 6" long	$27.50

ADD $2.50 PER ORDER FOR SHIPPING

AVAILABLE WITH:
½" Bore with ½" or ¼" adapter
½-20 RH Thread except ¾" x 3"
⅝" Bore except ¾" x 3" and 2" x 3"

Send Check or Money Order
MONEY BACK GUARANTEE

SINGLEY SPECIALTY CO. INC.
P.O. BOX 5087B
GREENSBORO, N.C. 27403

ROUTER BIT SALE

3 BIT SPECIAL: All Zac bits are carbide tipped & 1/4" shank. #6, 3/4" diam. × 1" cut edge, #5, 1/2" diam. × 1" cut edge, #25, 1/4" round over w/BB. & cat. **$25** ppd. To order bits CALL **800-441-0101** in NY 212-947-4496.

BIT 5

CATALOG: To order our fully illustrated 32 page catalog **mail in $2.50** in CK or MO for first class handling. NO phone orders for catalog alone.

ZAC PRODUCTS INC. 533 West 34 St. NYC, NY. 10001

HARDWOODS DOMESTIC AND IMPORTED

Veneers

Boat Lumber · Cabinet Lumber
Red Oak · White Oak · Ash · Birch · Birdseye · Teak
Mahoganies · Cherry · Walnut · Maple · Poplar · Basswood
·Bubinga · Pearwood · Osage · Pines · Padouk · Ramin · Rosewood
Wenge · Zebrawood · Bocote · Cocobolo · Che Chen · Ziricote
Oak Mouldings · Dowels · Hardwood Plywoods
Planing · Ripping · Millwork

No Minimum · Shipments Worldwide
30 Yr. Member National Hardwood Lumber Assoc.
Direct Importers of Foreign Hardwoods

United States Mahogany Corp.
746 Lloyd Road, Matawan, NJ 07747
(201) 583-6300
Open Monday thru Saturday

Woodworkers
ORGANIZER UNIT

*** More than a 1,000 pieces! ***
$29.95 plus $2.00 for shipping & handling

FREE Catalog Hundreds of woodworking patterns, books, tools & wood parts!

TIMBERS COUNTRY STORE No. G8 Carnelian Bay, CA 95711-0850
24 hr Phone No. 916-581-4141

MORE THAN A CATALOG...

Woodcraft is more than a catalog – it's one of the best sources for quality woodworking tools you'll ever discover. We're your source for everything from bit braces to wood borers, from saws to sharpening stones. Every item is crafted to meet precise standards of excellence, and backed by our guarantee of satisfaction. Some people may call this a catalog, but if you're a woodworker we think you'll call it indispensable. Send for your FREE Woodcraft Tool catalog today.

WOODCRAFT®
Dept. WBH75, 41 Atlantic Avenue,
Box 4000, Woburn, MA 01888

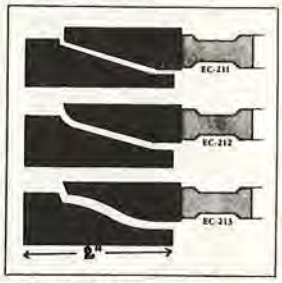
☐ **Please send me your FREE tool catalog.** WBH75

Name _____
Address _____
City _____
State _____ Zip _____

SALE on Industrial Quality Tools from

freud

ORDER TOLL FREE
1-800-243-0713
In KY call
606-255-5444



3 Wing Raised Panel Cutters

For your 1/2" or 3/4" spindle shaper. Carbide tipped for smooth cuts EC 211, EC 212 or EC 213.
List $122 **Sale $98 each**

SAWBLADES

LM 72M - 10" Rip 24t.....(list $65) **$40**
LU 85M - 10" Crosscut 80t .. (list $111) **$70**
LU 73M - 10" Crosscut 60t ....(list $79) **$40**
LU 84M - 10" Combi 50t .....(list $71) **$40**
LU 72M - 10" Combi 40t .....(list $69) **$38**
Shopsmith owners — Add $8 for 1¼" arbor hole

ALL PRICES POSTPAID

MANNY'S WOODWORKER'S PLACE
602 S. Broadway, Lexington, Ky. 40508
Hours: 10 - 5:30 Mon-Sat
VISA, MasterCard, Checks, COD ($2)

A Family Tradition Since 1916

Kuempel Chime

BUILD THE FINEST
We Know You Can Do It!

Easy to assemble quality Red-i-Kut Clock kits. A variety of designs hand made by our Grandfathers in solid ¾" cherry, oak or walnut with beveled glass.

Tubular Bell or Rod movements. Handcrafted pendulums. Original bronze etched dials and hand painted moonwheels.

Or start from scratch. American Classic Plan - $3.00

Write for Free Literature or Call

1-800-328-6445

Between 8 a.m. & 4 p.m.

Kuempel Chime
Dept. 006, 21195 Minnetonka Blvd.
Excelsior, MN 55331

INDUSTRIAL QUALITY CUTTING TOOLS — DML offers 1,002 different cutting tools, each engineered for a specific task, all made in America. Four information-filled brochures detail carbide-tipped saw blades, bits, and cutters: concise copy explains applications, photos show tool configurations, and charts list sizes. DML, INC. $1.00. *Circle No. 303.*

INDUSTRIAL QUALITY CUTTING TOOLS — Three large, colorful wall posters keep DML's huge line of carbide-tipped cutting tools close at hand for easy reference. Separate posters for saw blades, shaper heads (with diagrams of each cut), and router bits. Each features graphic displays of the tools, capabilities, and sizes. DML, INC. $3.00. *Circle No. 304.*

THE HARDWARE STORE IN YOUR MAILBOX — Select from over 1,500 items. Fasteners, organizers, specialty tools, welders, saw blades, air tools . . . all at super low prices. For handymen, do-it-yourselfers, and professionals. D.R.I. INDUSTRIES. $1.00 (Refundable with order). *Circle No. 307.*

DECRISTOFORO DESIGNS SELLS HIGH-QUALITY PLAN SHEETS — for wooden toys and power tool jigs. We also carry woodworking books by R.J. DeCristoforo, the snap stop reference clamp, and video tapes. Send for catalog and information package. DECRISTOFORO DESIGNS. $1.00. *Circle No. 310.*

DREMEL GUIDE TO COMPACT POWER TOOLS — Contains 266 pages of charts, project plans, "quick fixes", and over 425 photos on how to use all Dremel power tools. Also contains detailed information on how to use the Moto-Tool, which bit to use to cut, carve, grind, polish, sand, engrave, etc., and correct speed for best results. DREMEL, Div. Emerson Electric Co. $7.95. *Circle No. 340.*

DO-IT-YOURSELF LUMBER DRYING — This 22-page booklet *Kiln Chamber Construction Guide and Operation Manual* is designed for the individual wishing to dry his own lumber with a minimum investment of money, time, and space. Included are principles of dehumidification lumber drying, selection of which dryer is best for you, and kiln chamber plans and construction information. Also you will receive a questionnaire you can fill out and return. Once completed and returned you will receive free a computerized evaluation of your drying needs including investment considerations, operating costs, and payback. EBAC OF AMERICA, INC. $5.00. *Circle No. 400.*

MULTI-PURPOSE HOME WOODWORKING SYSTEM - The Emco Start-2000 is a table saw, band saw, moulding machine and disc sander and you can change operations in less than 30 seconds. One big 2 hp. motor does it all. With optional accessories you can do wood turning, mortising, horizontal drilling, and more. Send for four-color information. EMCO* USA. Free. *Circle No. 402.*

GET INTO THE WOODS WITH US — Educational Lumber Company, suppliers to school shops for 30 years, now offers you top grade Appalachian and imported hardwoods. We also handle softwoods, veneers, and turnings. All our products are kiln dried. Send for our catalog and receive your bonus: a set of 4 furniture plans. EDUCATIONAL LUMBER CO., INC. $2.00. *Circle No. 420.*

DO-IT-YOURSELF GRANDFATHER CLOCK KITS — Direct from world's largest manufacturer of grandfather clock kits. Prices starting at under $280 including West German Westminster chiming movement. Choose from black walnut, cherry, and oak. Other quality heirloom kits also available. Send for brochure. EMPEROR CLOCK CO. 50¢. *Circle No. 450.*

FINE TOOL SHOPS' CATALOGS — Presently, the Fine Tool Shops publishes a new full-color catalog every three months. It illustrates the world's finest woodworking tools at prices guaranteed to be the lowest in the mail order industry. In addition, there are special discounts for continuing customers, incentive bonuses, and name brand U.S. made tools at spectacular savings. THE FINE TOOL SHOPS. $1.00. *Circle No. 495.*

EXCELLENCE IN SHARPENING EQUIPMENT — This two-color, 56-page catalog from Foley-Belsaw Co. provides information on its complete line of equipment used for sharpening home, garden, and industrial shop saws and tools. Each machine is fully illustrated, complete specs and pricing information are provided. FOLEY-BELSAW CO. Free. *Circle No. 550.*

BEAT INFLATION AND HIGH LUMBERYARD PRICES — Turn trees into valuable lumber with the world-famous ONE-MAN PORTABLE SAWMILL. Goes right to the trees — turns out smooth, truecut lumber every time. No crew needed . . . no experience necessary. Send for booklet. FOLEY-BELSAW CO. Free. *Circle No. 551.*

FREE SUBSCRIPTION TO FOLEY-BELSAW NEWS BULLETION — For a limited time Foley-Belsaw will be giving away a 1-year subscription to their 64-page color publication. This publication includes stories and shop tips on all types of woodworking, tool sharpening, upholstery, engine repair, and locksmithing. The magazine, which is published six times a year, includes many special offers on Foley-Belsaw equipment. FOLEY-BELSAW CO. Free. *Circle No. 552.*

MR SAWDUST SAW BLADES — Get your 16-page illustrated booklet on Mr. Sawdust I blades for radial arm saws. This also includes information on our special non-splintering dado sets. In addition we will send a folder on Mr. Sawdust II ultra-smooth planer blades for table saws. You deserve the finest cuts possible. FORREST MFG. CO., INC. $1.00. *Circle No. 555.*

CUTTING TOOLS — Freud, USA provides the finest value in carbide cutting tools. From saw blades and boring bits to shaper heads and router bits. Our newest product — shaper heads for the half inch shaper spindle. Send for complete catalog. FREUD, USA. $5.00. *Circle No. 560.*

FULL-SIZE FURNITURE PLANS CATALOG — Illustrates and describes over 180 plans for making furniture of quality found in museums and fine furniture stores. Plans include rolltop desk, cradles, dining tables, chairs, buffets, chests, gun cabinets, poker table, children's furniture, rocking horse, spinning wheels, and more. Bill of materials exploded drawings assist the woodworker. FURNITURE DESIGN, INC. $2.00. *Circle No. 585.*

1984-85 MASTER CATALOG — contains 212 pages of the finest in woodworking hand tools, machinery, and finishing supplies plus over 125 books. Of particular note is the selection of Japanese tools. The format is all four-color. GARRETT WADE CO. $3.00. *Circle No. 600.*

BEAUTIFUL WIPE-ON WOOD FINISHING — is explained in a booklet from a pioneer in wipe-on finishes since 1928. Wood finishes that produce a beautiful hand-rubbed finish without messy brushes or spraying. Specially formulated finishes that simply wipe-on with professional results everytime — guaranteed! Unlike conventional finishes these will never yellow, crack, or craze and they dry dustfree without runs. These finishes will bring out the natural beauty of the wood and never needs waxing. Send today for your wood finishing guide and products catalog. GENERAL FINISHES. 25¢. *Circle No. 630.*

WORKING GREEN WOOD WITH PEG — 120-page book by Patrick Speilman with over 100 photographs and illustrations on treating green wood with PEG. This is the first complete book on how to use the safe non-toxic green wood stabilizer and seasoning agent. Wood finishing guide and products catalog included with each order. GENERAL FINISHES. $12.00. *Circle No. 631.*

COUNTRY FURNITURE PLANS — Our catalog features 14 designs — from country pie safe to mini-barn. Also included are various products for the home workshopper. Send for our latest catalog. Price of catalog deducted from your first order. HAMMERMARK ASSOCIATES. $1.00. *Circle No. 710.*

BRASS FURNITURE HARDWARE — This 36-page catalog shows over 500 items of authentic reproduction hardware from the 1700's and on into this century. These superior drawer pulls, knobs, hinges, finials, and other hardware items will greatly improve the appearance of your furnishings. HORTON BRASSES. $2.00. *Circle No. 750.*

BOLTS, NUTS, AND SCREWS — Catalog shows many types of zinc plated steel, stainless steel, and brass fasteners available from stock. Non-standards also can be special ordered. D.S. HOUSTON CO. $1.00. *Circle No. 760.*

IF YOU ARE INTERSTED IN FINE WOODWORK-

TO ORDER THESE BOOKLETS, USE COUPON ON PAGE 100

New

E-Z PNEUMATIC DRUM SANDER
...For woodworkers & carvers. Inflates to desired firmness, contours to the shape of your work. Eliminates hand-sanding. **Foredom tools-Detail Master burning unit-Abrasives-Books and more, at great prices!**

Catalog $2.00 (refundable).
North West Carving Supplies
P.O. Box 5211
Bozeman, MT 59715

BRANDING IRONS

FOR WOOD
AND LEATHER

- Brands Your Full Name With 1/8" or 1/4" High Letters

GUARANTEED

SEND FOR FREE BROCHURE

NOVA TOOL CO.
4533 Colfax Circle, **Dept. BH**
P.O. Box 29341, Lincoln, NE 68529

WOODWORKERS CATALOG

SEE 116 pages of hard-to-find products to build, restore, refinish anything of wood! Choose from 14 fine hardwoods, 109 veneers, 76 inlays. Cabinet & furn. hardware. Pro finishes. Uphol. supplies. Chair & table legs. 33 pic. moldings. Cane. Lamp parts. Carving tools. Specialty tools, shop equipment. 100's plans, how-to books. 2,000 products.

CONSTANTINE Est. 1812
2054 Eastchester Road, Bronx, N.Y. 10461
Here's $1 for 116-page Woodworkers Catalog

Double Your Money Back!
$2 refunded on 1st Catalog order.

Name _____

Address _____

City State Zip

CONCEALED HINGES FOR WOOD AND GLASS DOORS

- Largest Selection
- European (35mm)
- No-Bore For Glass
- Face Frame

Allen Specialty Hardware's emphasis is on MODERN hardware for craftsmen. European concealed hinges are our specialty, not a sideline. We offer the best selection, best quality, and most assistance in using them. Glass door hinges are available in either 2-pivot or no bore in nine styles. Make your kitchen cabinets more functional with wire shelves, baskets and slides. Build a computer cabinet using our TV extension slides. Our hardware for stereo cabinets includes everything from casters to lid hinges. No minimum order requirement and our prices are low.

STEREO AND KITCHEN CABINET HARDWARE
BRASS HARDWARE • SPECIALTY ITEMS
SLIDES • CATCHES • WOOD PULLS • ELEVATORS

MAIL ORDER ONLY – CATALOG $1.00
ALLEN SPECIALTY HARDWARE
CATALOG 6
P.O. BOX 10833 PITTSBURGH, PA 15236

MAKE TOYS & WOOD PROJECTS

7 CAR TRAIN
$6—Plan only
$26.50—Plan & turned parts (92 parts in all!)

62" long

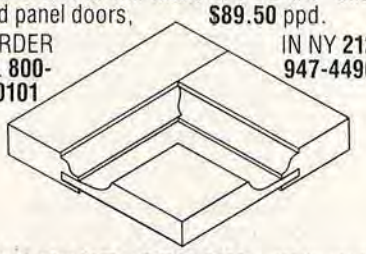
100's of plans, kits, colored and unfinished hardwood parts for toys, crafts and furniture (Colonial, Shaker, primitive & modern). Bulk Prices available. Color catalog $1. (614) 484-1746

Cherry Tree Toys, Box 369-9, Belmont, OH 43718

THE DOOR SHOP™

The original Ogee **DOOR SHOP**™ as featured in WOOD MAGAZINE (MAY/JUNE 85) is complete with style & rail, slot & panel raising bits for the 1/4" chuck router. Bits are carbide tipped & BB. & will make 3/4"–2-1/4" thick raised panel doors, **$89.50** ppd.

TO ORDER CALL **800-441-0101** IN NY **212-947-4496.**



ZAC PRODUCTS INC. 533 West 34 St. NYC. NY. 10001

RECANE *for fun and profit*

Recane or re-rush heirloom chairs — for yourself or for others as a profitable hobby — with our full line of materials & instruction books.

Since 1934 America's largest selection of caning & basketry materials & supplies —

- **Superior quality weaving cane & machine woven cane**
- **Flat, oval & round reeds**
- **Fibre & genuine rush**
- **Danish seat cord**
- **Raffia, rattan, seagrass**

Illustrated catalog with complete how-to-do-it information, prices, order form: $1 (refundable with 1st order)

CANE & BASKET SUPPLY CO.
1283 S. Cochran, Dept. W, Los Angeles, CA 90019

22½° OCTAGON GAUGE

TO SET MITER TO SAW BLADE FOR 22½° CUT. HARDENED ALUMINUM GAUGE HAS OCTAGON FORMULAS AND 14" RULER SCREENED ON. ALSO SCREW CHECKER AND INFORMATION.

$7.95 Plus $2.00 Handling and Shipping

California residents add 6% sales tax. Send check or money order to:

LYON ELECTRIC COMPANY, INC.
P.O. BOX 81303 SAN DIEGO, CA 92138

WOOD REPAIR

Durham's Rock Hard Water Putty makes lasting repairs in wood. Won't shrink or fall out. Sets quickly, holds tight and can easily be painted. Economical, easy to use. Available at lumber, paint and hardware stores.

DONALD DURHAM COMPANY
Box 804-W Des Moines, IA 50304

Send For New 36 Page Woodworker's Catalog

Hundreds of craft plans, furniture plans, fancy veneers and veneer faces, toymaking parts and plans, turning squares, brasswood carving blocks, hardwood lumber, chair cane, replacement seats, rush, splint, shaker pegs, mug pegs, candle cups, dowels, spindles, books, inlays, reproduction hardware. Send $1.00 now for catalog and special bonus starter offers, *Hurry!*

Morgan Woodworking Supplies, Dept. WO6M07-D
1123 Bardstown Rd., Louisville, KY 40204

BAND SAW BLADES

WELDED TO YOUR EXACT LENGTH

WIDTHS	TEETH	PRICE/INCH
1/16"	24 & 32	$.09
1/8" thru 5/8"	3 thru 32	$.05

OTHER SIZES AVAILABLE — INQUIRE

To Figure Price:
Inch Length × Price/Inch + $1.85 Weld Charge

MINIMUM ORDER: $10.00
Add $2.50 for Shipping-Prompt Delivery

PHONE ORDERS —
1 (800) 543-8664 (Outside Ohio)
1 (513) 621-2159 (In Ohio)
VISA or MasterCard Accepted or
Send Payment with Order or
Write for More Information to:

BUCKEYE SAW COMPANY
P.O. Box 14794
Cincinnati, Ohio 45214

WOODTURNERS

TWO-DAY TURNERS' WORKSHOP [SINCE 1976]
For beginners and experienced turners. Midweek or weekend throughout the year. Two students per class for personal attention. Sharpening and proper use of tools for faceplate and centers turning. Build confidence and experience, or just find out if you like to turn. Full accommodations available.

MYFORD ML8 WOODTURNING LATHE
Finest quality and design, including outboard tool rest for bowl turning. 36" or 42" between centers.

THE ZIMMERMAN WOODTURNING LETTER
Comprehensive; instructive; the "why" as well as the "how." Excellent preview or review for workshop.
1983 EDITION: 76 PAGES. $7 ppd.
1984 EDITION: 72 PAGES. $8 ppd.
1985 EDITION: 72 PAGES. $9 ppd.

SEND 60¢ IN STAMPS FOR DETAILS
Including SORBY turning tools, chucks, and DOUBLE-STICK TAPE. (Why use messy glue and paper to hold on bowls?)

RUSS ZIMMERMAN, RFD 3, BOX 242
PUTNEY, VERMONT 05346

ING — you will not find better machinery than that sold by J.P. Humfrey Ltd. For example, we have 100, 10-in. general tablesaws (2 HP, magnetic switch, lever-lock fence) available at $1,295 FOB New York. Send for brochure. J. PHILIP HUMFREY LTD. $1.00. *Circle No. 770.*

START SMALL BUSINESS WITH NEW SCROLL SAW — The Excalibur precision scroll saw from Canada can turn your workshop into a profit center. Make toys and puzzles, do intricate marquetry work or detailed cabinet work with these "operator friendly" machines. Hundreds sold in the U.S. already. Save, buy direct, from $495. up. Complete project patterns and plans available. Send for brochure. J. PHILIP HUMFREY LTD. $1.00. *Circle No. 771.*

BUY YOUR SANDING BELTS DIRECT FROM THE MANUFACTURER — Industrial Abrasives is the company that gives you six free belts with every dozen ordered. But, sanding belts are not the only product we have to offer. In our catalog you will find many specialty items not readily available in your hardware store. Price of catalog refunded with first order. INDUSTRIAL ABRASIVES CO. $1.00. *Circle No. 780.*

THE CUSHION CONTOUR SANDER — is a new concept in pneumatic drum sanding. Sanding sleeves are slid over an air bag (inflated with a hand tire pump) on an arbor to mount it between centers on a wood lathe. Drum effectively takes on profiles, curves, and bevels practically eliminating flat spots and chatter marks. INDUSTRIAL ABRASIVES CO. Free. *Circle No. 781.*

THE FINE TOOL JOURNAL — Published 10 times per year, this publication will keep you up to date with the many aspects of the world of antique and obsolete hand tools. Tools are offered for sale, books on tools are reviewed and sold, auctions are reviewed, articles on identification, values, and history. Send for sample copy. IRON HORSE ANTIQUES, INC. $1.50. *Circle No. 800.*

WOODWORKING BENCH WITH INTEGRAL VENEER PRESS — State of the art, precision workbench with high quality vise. Torsion-box construction in man-made materials gives stability, rigidity and flatness unobtainable in solid wood. Designed also for clamping case-goods and as a very accurate, one person operated veneer press. Send for brochure. KIRBY STUDIOS PRODUCTS LTD. 50¢. *Circle No. 1025.*

REVIVAL 80-HANDMADE BEDROOM FURNITURE — in native selected cherry, oak, or walnut. Beds, bedside tables, six-drawer chests, pedestals. Exclusive designs by Ian Kirby. Sophisticated modern interpretation of traditional English frame and panel furniture. Beautifully made for discerning people. Send for photo and brochure. KIRBY STUDIOS PRODUCTS LTD. $2.50. *Circle No. 1026.*

QUALITY CLOCK KITS AND PLANS — Handmade and semi-assembled of carefully selected ¾ in. cherry, oak, or walnut with beveled glass. Or build from "scratch" using our detailed plans and trim pieces. Choice of quality movements. Established in 1916. KUEMPEL CHIME CLOCK WORKS. $1.50. *Circle No. 1070.*

FREE LITERATURE — New brochure showing all moisture meters and accessories for moisture meters such as interchangeable electrodes and probes and cables for in-kiln moisture monitoring. Complete line of moisture meters include: Pocket-size Mini-Ligno with LED readout 6%-20%, Mini Ligno E 6%-36%, analog display meters 4%-30%, 60% and a digital moisture meter with built-in compensation for different wood temperatures. LIGNOMAT USA, LTD. Free. *Circle No. 1130.*

PRODUCTION QUALITY CARBIDE TIPPED ROUTER BITS — MLCS Ltd. offers a full line of professional production quality carbide tipped router bits at 50-70% lower than retail prices. We sell through the mail and only direct to craftsmen. Send today for information. MLCS LTD. Free. *Circle No. 1210.*

WOODWORKING PLANS — Catalog of full-size plans printed on heavy paper for toys, gifts, novelties, action windmills, shelves, birdhouses, garden furniture, Dutch windmill, lawn ornaments, old-fashioned lawn swing, jigsaw projects for children, and more. MASTERCRAFT PLANS WEST. $1.00. *Circle No. 1216.*

WOODWORKING BOOKS AT DISCOUNT PRICES — Most complete listing of books for woodworkers. Each book is discounted from 10 to 25% off the cover price. There is absolutely no shipping and handling charge. Woodworking, carving, turning, project books by authors such as Krenov, Frid, Spielman, Nish, Tangerman, and Hoadley are listed along with many hard-to-find titles. MANNY'S WOODWORKER'S PLACE. $2.00. *Circle No. 1217.*

FREE MAZDA TRUCK CATALOG — 22-page, full-color B2000 full-line truck catalog featuring the B2000, the lowest priced truck in America; the B2000SE-5, a sporty truck priced close to Toyota's and Nissan's base trucks; and the B2000LY, a unique combination of luxury and sportiness. MAZDA. Free. *Circle No. 1219.*

WOODWORKER'S SPECIALTIES — 24-page catalog of plans and hard-to-find hardware for the woodworker. Brass hardware, screws, cork products, wood turnings, canister liners, clock movements, picture frame supplies, lamp parts, and more. MEISEL HARDWARE SPECIALTIES. $1.00. *Circle No. 1220.*

WEST GERMAN POWER TOOLS — 28 pages of power tools for wood and metalworking from Metabo, one of the world's leading manufacturers specializing in power tools for the professional. Quality control starts with the raw materials and is repeated through every step of the manufacturing process, assuring maximum reliability and performance. The Metabo seal is your assurance of power, safety, quality, precision, and long life. METABO CORPORATION. $1.00. *Circle No. 1225.*

GERMAN STEEL TOOL CATALOG — 24 pages packed with finest quality tools manufactured in Germany. Included are thousands of unusual and hard-to-find chisels, gouges, parting tools, etc. — all hardened and tempered to hold a keen edge and give a lifetime of dependable service. FRANK MITTERMEIER, INC. Free. *Circle No. 1250.*

MITY-TITE SYSTEMS — No job is too tough for Mity-Tite. If you want to clamp furniture, assemble fabricated items of any shape or form, frame a picture, do home improvements, do glueing, banding or any one of a thousand tasks, you need Mity-Tite. MITY-TITE SYSTEMS. $1.00. *Circle No. 1255.*

WOODWORKING SUPPLIES CATALOG — Bob Morgan's new 36-page color catalog for woodworkers offers a broad choice of foreign and domestic veneers, woodcraft patterns, books, basswood carving blocks, hardwood lumber and turning squares (at factory-to-you prices), toymaking parts and plans, chair cane, spindles, dowels, shaker pegs, mug pegs, candle cups, and fancy inlay borders. Also included is a colorful wood selector chart, simplified veneering instructions, and introductory incentive offers. BOB MORGAN WOODWORKING SUPPLIES. $1.00. *Circle No. 1257.*

WOOD CARVING — You can obtain information on learning woodcarving by sending for our literature. The offer includes sample copy of *The Mallet Magazine* and two lesson sheets on carving. NATIONAL CARVERS MUSEUM. $1.00. *Circle No. 1300.*

WOODWORKING TOOL CATALOGS — R.A. Ness & Co., the Woodworkers Emporium, offers a 2-year subscription, a total of eight huge sale catalogs. Thousands of industrial quality items — machinery, hand tools, portable electric tools, and supplies — are featured at super sale prices. The fee is refundable with purchase. R. A. NESS & CO., the Woodworkers Emporium. $4.00. *Circle No. 1310.*

CLOCK COMPONENTS — We feature battery, pendulum, and chime quartz movements of all types: Urgos, Hermle, Grandmother, Grandfather cable drive and chain drive, keywind movements of all types. 400-day clocks, music box movements, flat and benzel type dials — plus a vast assortment of weather instruments. Hundreds of clock items. Very competitive. 75-page catalog. NEWPORT ENTERPRISES. Free. *Circle No. 1320.*

WOOD WORKERS—CARVERS SUPPLIES — Catalog on hand to find items. E-Z pneumatic drum sander, Foredom tools and accessories, Detail Master woodburning unit, abrasive cartridge rolls, books, patterns, much more. NORTH WEST CARVING SUPPLIES. $2.00. (Refundable). *Circle No. 1360.*

PERSONAL BRANDING IRON — Brochures describes line of branding irons that makes it easy to put your name on your work. Made especially for branding wood, they are available with 1, 2, or 3 lines of copy in either ⅛- or ¼-in. letters. Makes a clean, sharp mark that shows pride in workmanship. Also included is information on handscrew clamp hardware that allows you to make your own clamps at approximately 50% savings. NOVA TOOL CO. 50¢. *Circle No. 1380.*

PIN ROUTER AND ROUTER BIT CATALOG — Brochure showing the inverted pin router, the most versatile, easy-to-operate pin router in the world. Designed for operator safety and comfort. Included is a 22-page router bit catalog of all industrial grade bits in both highspeed steel and carbide. C.R. ONSRUD, INC. $1.00. *Circle No. 1440.*

HOW TO BUILD A SATELLITE TV ANTENNA FOR UNDER $200. — A 42-page booklet of complete information with step-by-step fully illustrated instructions. Tells how to install, how to find the satellites from your area, lists electronic equipment suppliers, and much more. Enjoy a new dimension of TV entertainment in your home. PLAN CREATIONS. $11.95. *Circle No. 1535.*

QUARTZ CLOCK MOVEMENTS — Deal directly with the nation's largest independent distributor of quartz clock movements. Thousands of ultra-thin, pendulum, and chime movements in stock at all times. Our 36-page catalog features a large selection of hands, dials, numerals, weather instruments, as well as many other clock making supplies. Most orders shipped within 48 hours. PRECISION MOVEMENTS. Free. *Circle No. 1555.*

PLANERS ARE OUR SPECIALTY — Heavy duty 15, 16, 20, and 24 in. planers at the lowest prices in the U.S. We also carry quality jigsaws at realistic prices and a full-line of other shop tools. All tools are returnable within 30 days for full refund. Send for information. PRO SHOP. Free. *Circle No. 1560.*

LETTER LAYOUT GUIDES — Brochure containing complete information about a new product of special interest to scroll sawers, carvers, and wood sign makers. A lettering guide to layout large letters and numbers to be cut in wood or other materials. Made from a durable plastic material for years of use. Price of brochure is refundable with first order. SEYCO SALES CO. $3.00. *Circle No. 1710.*

PENNSYLVANIA DUTCH FURNITURE KITS AND PLANS — All kits crafted in solid hardwoods in classic designs such as our original ice box, child's rocker, classic roll top desk, and more. Build from our easy-to-assemble kits or our blueprint plans. We include the hardware, fasteners, instructions, and you include the fun. THE SHOP. $1.00 (Refundable with order). *Circle No. 1720.*

SLEEVELESS DRUM SANDERS — Economical—simply cut sandpaper from standard size sheets. Unique way of holding sandpaper to drum—a twist of the key tightens. Sponge rubber backing insures long wear of sandpaper. Sanders can be used on drill press, small motor, lathe, combo-tools, radial saw, hand drill, and other revolving devices. Send for brochure. SINGLEY SPECIALTY CO., INC. Free. *Circle No. 1735.*

HOME CRAFTSMAN BOOK CATALOG — over 125 titles in every area of woodworking and for every level of expertise. From detailed instructions on routers and table saws to exquisite patterns for decoys and wooden toys to the best in wood turning. Discounts available on every order, and the catalog charge is refundable on your first order. STERLING PUBLISHING CO., INC. $1.00. *Circle No. 1740.*

SYSTEMS IN JOINERY — New 25-page illustrated catalog featuring many uses of the joint-matic and introduction of other high quality machines, fixtures, and cutting tools that make many of the more difficult tasks in woodworking easier. STRONG TOOL DESIGN. $2.00. *Circle No. 1745.*

CUPOLA AND BRIDGE STUDY PLAN BOOK — Consists of designs for 22-ft. bridges, 8 covered bridges, 36 cupolas, and some history of each. Complete plans available for each design. SUN DESIGNS. $7.95. *Circle No. 1750.*

GAZEBOS AND OTHER GARDEN STRUCTURES — The most comprehensive collection of gazebo designs found anywhere today. Includes 55 gazebo designs from 8 ft. to 30 ft., 13 strombrellas, 7 arbors, 14 bird feeders, and 4 birdhouse designs. Has mini-plans of 2 bird feeders and 1 of our most popular Tiffany gazebo. Complete construction plans can be ordered for all 93 designs. SUN DESIGNS. $7.95. *Circle No. 1751.*

TOYMAKERS! Send For New Catalog of 210 Parts and Plans

Largest toymaker's selection in U.S.! Send for catalog fo 210 toy parts, patterns, wheels, kits, books, dowels and supplies. Learn how to make hundreds of unusual toys for fun or profit! *Hurry!* Get in on the action now! Special starter offers included. Send $1.00 today for catalog plus bonus offers!

Morgan Toy Supplies, Dept. WO6B04-D
1123 Bardstown Rd., Louisville, KY 40204

The Try Square. Perhaps the Most Important Tool In Your Shop.

You layout lines with it. You set machines with it. You check joinery with it. You have to trust it.

Sound woodworking lies in layout tools. We know. The people at Bridge City Tool Works are woodworkers. We're in the business of accuracy because we got tired of inaccuracy. The TS-2 Master Try Square is the finest 8" try square available. Solid brass and rosewood. Beautifully crafted. Accurate to + or − .002" over the length of the blade, inside and out! You can trust it.

The TS-2 Master Try Square is *unconditionally guaranteed* for ninety days. $47.00 plus $2.00 packaging/shipping. For a catalog of our other beautiful tools, mail $1.00. (Free with purchase.)

Send check, MO, Visa, MC, or American Express. Include quantity, card no. & exp. date, your name and your address.

Bridge City Tool Works
2834 N.E. 39th Ave., Portland, OR 97212
(503) 282-6997.

CLOCK COMPONENTS

QUARTZ CLOCK MOVEMENTS

WE FEATURE BATTERY, PENDULUM, CHIME QUARTZ MOVEMENTS OF ALL TYPES. URGOS, HERMLE, GRANDMOTHER, GRANDFATHER CABLE DRIVE AND CHAIN DRIVE, KEY WIND MOVEMENTS OF ALL TYPES. 400 DAY CLOCKS, MUSIC BOX MOVEMENTS, FLAT AND BEZEL TYPE DIALS—PLUS A VAST ASSORTMENT OF WEATHER INSTRUMENTS. HUNDREDS OF CLOCK ITEMS. VERY COMPETITIVE PRICES. WRITE OR CALL FOR FREE 75 PAGE CATALOG. $2 FOR AIR MAIL.

THE QUARTZ FITUP

THE MINI QUARTZ

Send To:
NEWPORT ENTERPRISES INC.
2313 W. Burbank Blvd.,
Burbank, CA 91506
(213) 845-0555

THE MAGNIFICENT MALLET

- **14-oz... $7.50**
- **18-oz... $7.50**
- **24-oz... $7.95**
- **32-oz... $7.95**

+$2.25 Pstge.

Top Quality • Extra Durable • One-Piece Lignum Vitae Carver's Mallet
Liberal discount to Schools and Dealers.
FREE 24-P. German steel tool catalog-write:

FRANK MITTERMEIER, INC.
IMPORTERS OF FINE TOOLS SINCE 1936
Dept. WM-075, 3577 E. Tremont Avenue
Bronx, New York 10465

PEG WHOLESALE

POLYETHYLENE GLYCOL

Green wood stabilizer and chemical seasoning agent

10 POUNDS $17.00

FREE wood finishing guide and products catalog from

GENERAL FINISHES
Box 14363, West Allis, WI 53214
Phone 414-774-1050 with M.C. or VISA

NEW & OUT OF PRINT WOODWORKING BOOKS

Supplier of new, out of print, and antiquarian books in the field of woodworking. Hundreds of titles available. Collectors, schools, and institutions, create a working reference library. **Send $1.50 for catalog subscription.**

R. SORSKY *Bookseller*
Dept. BH, 3845 N. Blackstone, Fresno, CA 93726
Member American Booksellers Assoc.

KID'S CONVERTIBLE

IT'S A DESK, BENCH AND TOY CHEST ALL IN ONE! As a desk and bench, there's room enough to seat two children. Made from veneer plywood it becomes a fine piece of solid furniture for kids to enjoy for years. PLANS & INSTRUCTIONS: $4.00. We'll ship immediately and include a catalog of our other unique and functional projects.

BALLART DESIGN 4606 S. 600 EAST
SALT LAKE CITY, UTAH 84107

Develop a profitable second income in your spare time making small, unique bandsaw boxes. This unpublicized, little-known technique allows you to turn common inexpensive lumber and scraps into valuable utility boxes for the home and office. High demand in gift shops, stationery stores and craft fairs. Fully illustrated instruction booklet of 15 original and profitable designs. Satisfaction absolutely guaranteed. Send $10.00 to **Box-Art, Dept. P, Box 8069, Woodridge, IL 60517.**

"MAKER'S MARK" BRANDING TOOL

SEND FOR FREE INFO PACK

NOW! Brand your own name permanently on wood and leather handcrafts! Simple to use. Long lasting U L approved electric handle. Brands full name. Guaranteed.

CRAFTMARK PRODUCTS, INC.
P.O. Box 6308BH7 • Marietta, GA 30065

TV/VCR Console

Designed for today's home electronics – a tv and video recorder – this contemporary cabinet has a lift top compartment for either a front or top loading unit and two drawers for tape and accessory storage.

Complete plan with full scale details $8
Catalog $1

(IL res. add sales tax)
Cornerstone Design Inc., Dept. A8
P.O. Box 300, Elmhurst, IL, 60126

35 Years in Creative Arts & Trades

Van Dyke's

Presents a Supply Catalog for Upholstery, Antique Restoration, Wood Working & Related Trades!

Many Hard-to-Find Items!
SEND FOR YOUR FREE CATALOG:
Van Dyke's Supply Co., Dept. 55
4th AVE., WOONSOCKET, SOUTH DAKOTA 57385

BOOK OF OUTBUILDINGS — 25 illustrated designs that can be used for unique storage sheds, playhouses, saunas, cabanas, guesthouses, or even privies. Send for *The Classic Outhouse* book. SUN DESIGNS. $7.95. *Circle No. 1752.*

"THE STROM TOYS" — a full-color, 96-page paperbound book of extraordinary wood toy designs, and a richly illustrated children's story. Contains 40 designs for which plans can be ordered, and 12 mini-plans. Makes an excellent gift. SUN DESIGNS. $9.95. *Circle No. 1753.*

BACKYARD STRUCTURES — Contains designs for 21 really different storage sheds, 5 cabanas, 13 animal shelters, 3 barns, 13 garbage enclosures, 3 studios, and more, plus 8 plans in book. 66 designs in all, for which plans can be ordered. Full color. SUN DESIGNS. $8.95. *Circle No. 1754.*

FINE WOODWORKING VIDEO TAPES — Now you can learn woodworking from top professionals in your own home, at your own pace. Our brochure describes the five tapes in the series: *Dovetailing a Draw, Bowl Turning, Wood Finishing, Carving a Ball-and-Claw Foot, and Radial-Arm-Saw Joinery* — all from the publishers of Fine Woodworking Magazine. TAUNTON PRESS. 50¢. *Circle No. 1800.*

TIMBERS COUNTRY STORE — Catalog features hundreds of woodworking supplies, toy patterns, furniture patterns, tool use and instruction books, woodworking pattern books, hardwood toy and furniture parts plus many hard to find tools and shop supplies. TIMBERS COUNTRY STORE. $1.00. *Circle No. 1820.*

ATTENTION WOODWORKERS — Learn how you can afford a quality 24 in. scroll saw that you build from a kit. Also ask how, with the WHEEL-RIGHT, you can mass- produce wooden wheels by using your drill press. THE TOOL COMPANY. $1.00. *Circle No. 1840.*

BUTLER SERVING TRAY TABLE PLANS — 16-page instruction booklet with full-size leg and detail templates for easy construction of this table and 7 others: curio table, lamptable, nightstand, or nightstand with shelf, 2 Queen Anne tables, and a Pembroke dropleaf. TOOLS, ETC. $4.95. *Circle No. 1845.*

TOYMAKERS SUPPLIES — Catalog of over 100 full-size wooden toy patterns — classic to contemporary designs from Packard Le Baron to Streamlined train and moon machine. Easy to follow, fully illustrated patterns which appeal to all ages. Hardwood wheels, shaker pegs, axles, etc., in stock. Accessory kits of pattern and turnings available. TOY DESIGNS. $1.50. *Circle No. 1860.*

WOOD TOY PATTERNS — Patterns for all ages including childrens' patterns and executive toys. New catalog has many new patterns to choose from including parts and wheels. Send for new catalog and receive a coupon for free wheels and axle pegs. TOYS AND JOYS. $1.00. *Circle No. 1865.*

WOODWORKERS CATALOG — of discount power tools, hand tools, books, plans, saw blades, router bits, sanding belts and sheets, cane, adhesives, screws, and much more. One year catalog subscription (3 to 4 issues) also includes a subscription to "Woodworking Trends", a house publication debuting this spring. TREND-LINES, INC. $2.00. *Circle No. 1870.*

BRANDING IRON — Let the world know who made it! Personalize and sign your work with one of our flame or electrically heated custom made branding irons. Send for complete details. TURNING POINT INC. $1.00. *Circle No. 1885.*

SUPPORTABLE — The material support system that works equally well with your complete line of woodworking equipment; table and radial saws, planers, jointers, etc. Supportable allows you to handle the big pieces alone — safely. Send for complete brochure. TURNING POINT INC. $1.00. *Circle No. 1886.*

WOODCARVING TOOLS — Whittlers and carvers — Warren Tool Co. offers a catalog for you full of whittling and carving hand/power tools, books, stones, wood, and supplies. Since 1927, the finest in woodcarvers tools. WARREN TOOL CO., INC. 60¢. *Circle No. 2020.*

BEAUTIFUL WOOD FINISHING — with Watco Danish Oil Wood Finish. Full-color *How to Beautifully Finish Wood* booklet enables anyone to create professional finishes the first time with all types of wood. One application of Watco Wood Finish seals, primes, finishes, hardens, protects, beautifies, penetrates deeply into the wood; outlasts surface coats three to one. Eight attractive Danish Oil colors now available. Eliminates pre-staining. WATCO-DENNIS CORP. Free. *Circle No. 2025.*

FREE GIFTS FOR WOODWORKERS — New *National Directory of Valuable Free Gifts and Things For Do-It-Yourselfers!* How and where to write for hundreds of free gifts, catalogs, samples, "how-to" instructions, manuals, courses, handbooks, magazines, books, plans, and hundreds of other free items for woodworkers. WEISS & DAUGHTERS. $1.99. *Circle No. 2030.*

FREE BUILDING AND REMODELING GIFTS — *New National Directory of Valuable Free Gifts and Things—Plus Government Benefits—For People Who Are Going To Build, Remodel, Add On, Or Decorate.* How and where to write for hundreds of free gifts, plans, samples, layouts, building and remodeling plans, aids, books, government benefits, low-cost loans, and much more. WEISS & DAUGHTERS. $1.99. *Circle No. 2031.*

FREE PLANS — *New National Directory of Valuable Free Plans for People Who Are Going to Build, Remodel, or Add On!* How and where to write for hundreds of free building plans, layouts, blueprints, planning and building aids, guides, magazines, handbooks, newsletters, how-to instructions, and much more. WEISS & DAUGHTERS. $1.99. *Circle No. 2032.*

FREE: HOW TO SAVE TIME AND MATERIAL — Work with confidence and control. SHOPHELPER Safety Guides provide stability, to help eliminate binding, chatter, and kickback. With an extra pair of hands from SHOPHELPER you can hold work firmly on table and radial saws, shapers, band saws, and others. Complete information and operator's manual from WESTERN COMMERCIAL PRODUCTS. Free. *Circle No. 2040.*

FURNITURE KITS — Queen Anne period antique reproduction furniture kits and cabriole legs carefully crafted in Black Walnut, Cherry, and Honduras Mahogany. Kits include illustrated instructions, hardware, and brass. Send for color brochure. WINDSOR CLASSICS. $1.00. *Circle No. 2050.*

THE WING M-100 ROUTER TEMPLATE — FAST AND EASY PRODUCTION FOR SMALL, MEDIUM, OR LARGE PANELS — Both versatile and fast, the M-100 Router Template and its selection of interchangeable design units, allows competent production of a wide variety of ornamental borders by either professionals or home craftsmen. It can be used with any make of portable router to decorate a door or drawer in just 30 seconds. Send for literature. WING SALES AND DIST. CO. Free. *Circle No. 2055.*

WOODWORKERS CATALOG — More than a catalog — it's one of the best sources for quality woodworking tools. You'll find everything from bit braces to wood borers, from saws to sharpening stones. Every product is sold satisfaction guaranteed. WOODCRAFT SUPPLY CORP. Free *Circle No. 2070.*

THE JAPAN WOODWORKER'S 1984 CATALOG — is loaded with the best tools you can get your hands on. In our catalog you will find a complete selection of Japanese tools for the woodcarver, carpenter, and cabinet maker. Send for catalog plus supplements for next two years. WOODLINE-THE JAPAN WOODWORKER. $1.50. *Circle No. 2075.*

THE ULTIMATE DOVETAIL JIG — Industrial quality Dovetail Jig utilizes ball bearing, guided router cutters for producing perfect machine, hand-typed, and sliding Dovetails using your router. WOODMACHINE CO. 25¢. *Circle No. 2077.*

POWER-FEED DRUM SANDER — Use the Woodmaster Model 1200 to dimension and finish-sand cabinet pieces, resawn stock, paneling, grandfather clocks, toys, table tops, knees, burls, crotches, and much more. This heavy-duty 12 in. sander comes complete with motor and stand. 30 day free trial. . .easy terms. Send for information kit. WOODMASTER TOOLS. Free. *Circle No. 2080.*

HIGH PRECISION SCROLL SAW — The sturdy, new Woodmaster Model 1600 gives you all the features found in more expensive machines including big, 16-in. throat capacity, 2-in. cutting depth, a generous, oversized worktable, ball-bearing drive . . . and much more! Send for complete facts. See how you can use the Woodmaster Model 1600 in your own shop for one full month completely without risk. Send for information kit. WOODMASTER TOOLS, INC. Free. *Circle No. 2081.*

GIANT 24½-IN., 3-SPEED BAND SAW — Big 24½-in. throat easily handles large scrollwork, complex curves, 4x8 sheets. 9-in. vertical cut makes it easy to resaw valuable hardwoods. Ball bearing construction, all-steel welded frame to eliminate deflection. Can be ordered complete with motor, stand, dust collector, rip fence, scroll saw table. Full instructions. Send for complete facts on how you can try this versatile saw without risk. Easy terms. WOODMASTER TOOLS, INC. Free. *Circle No. 2082.*

PLANER/MOLDER/JOINTER/SANDER — This variable speed, power feed tool converts low-cost lumber into valuable finished stock. Turns out perfect quarter-round, casing, base mold, tongue and groove . . . all popular patterns including picture frames. Joints super-true edges, squared stock, bevels and chamfers. Optional sanding attachment quickly converts unit to one of the finest drum sanders available. 30-day free trial . . . easy terms. Send for information kit. WOODMASTER TOOLS, INC. Free. *Circle No. 2083.*

WOODWORKERS SUPPLY — Offers high quality tools and supplies for skilled, amateur, and professional woodworkers. Our complete catalog includes machinery, hand tools, plans, router bits, shaper cutters, wood specialities, and more. For your two year subscription send to WOODWORKERS SUPPLY OF NEW MEXICO. $2.00. *Circle No. 2125.*

WOODWORKING ASSOCIATION OF NORTH AMERICA — First International Association for Woodworkers. Sample benefits include our quarterly magazine "International Woodworking", specials from selected manufacturers, group health, homeowner and auto insurance, access to the woodworking network. WOODWORKING ASSOCIATION OF NORTH AMERICA. Free. *Circle No. 2127.*

QUALITY AMERICAN-MADE WOOD TURNINGS — such as shaker pegs, spindles, toy wheels, toy parts, craft items, and dowel rods in birch, oak, walnut, and cherry. Send for complete 32-page catalog. WOODWORKS. $1.00. *Circle No. 2130.*

WOOD WORLD CATALOG — Send for your catalog on lumber, veneer, hand and power tools, with helpful hints on how to use your tools and materials to their best advantage. Send for complete color catalog. WOOD WORLD. $2.50. *Circle No. 2140.*

EXOTIC HARDWOODS — Wyndham Woods offers the finest exotic hardwoods, precision cut and dried to our specifications at a modern European mill. As a direct importer we can offer substantial savings on such fine woods as padouk, mahogany, shedua, doussie, zebrawood, and many others, as well as domestic species and veneers. For the best wood at the best prices, send for our catalog. WYNDHAM WOODS, INC. $1.00 (Refundable with order). *Circle No. 2160.*

WOODWORKING POWER TOOLS AND MACHINERY — A selection of full-line catalogs from leading manufacturers featuring complete specifications and accessory listings; discount price lists included. THE XYLOPHILE'S CO. $2.50. *Circle No. 2170.*

CARBIDE ROUTER AND SHAPER BITS — Our industrial carbide router bits will make you and your work achieve your goals, make things happen, and avoid problems. Zac router bits will expand your possibilities and options while giving the precise details you need. With your router and our tooling your shop becomes a system that you and your family will be proud of. Feel the satisfaction of improving your shops while you and others will know you bought the best. We consistently deliver high-quality router bits shaper cutters. Our 32-page catalog will improve your knowlege and skills. Send for it today. ZAC PRODUCTS, INC. $1.50. *Circle No. 2195.*

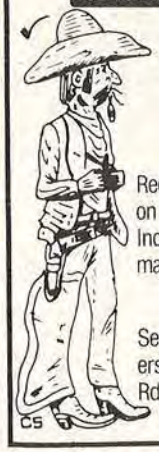
WOODTURNING INSTRUCTION AND SUPPLIES — Brochure describes program of personal instruction at our studio, with full accomodations. Also Myford lathes, Sorby tools, doublefaced tape, chucks, and our newsletter for turners. RUSS ZIMMERMAN. 60¢. *Circle No. 2200.*

PANEL RAISER™

Zac's carbide tipped **PANEL RAISER**™ bits come in 3 styles, OGEE, COVE, & PROVINCIAL. All 1/2" shank bits are 3-1/2" in diam. w/BB & give a full 1-1/2" raised panel, **$99.50** ppd. All 1/4" shank bits are 2" in diam. & give a 1" or larger raised panel cut, **$65** ppd. To order CALL **800-441-0101** in NY call **212-947-4496.**

ZAC
PRODUCTS INC.
533 WEST 34 ST.
NYC, NY 10001

National Carvers Museum



LEARN WOODCARVING AT HOME

Receive sample instructional pack on whittling and woodcarving. Includes copy of *Mallet* monthly magazine.

Send $1.00 to The National Carvers Museum, 14960 Woodcarver Rd., Monument, CO 80132.

SCROLL SAW OWNERS -
Lettering Layout Guides!

- Use our specially designed guides to layout letters & numbers to be cut from wood or other materials.
- Made from a durable plastic material.
- Several styles & sizes.

Send $3.00 (Refundable with first order) for descriptive brochure & prices to:

SEYCO SALES
1238 Bardfield
Box 472749
Garland, Texas 75047

QUARTZ

CLOCK MOVEMENTS
AND ACCESSORIES

- 5 Year Guarantee
- FREE Hour & Minute Hands
- 4 Shaft Lengths
  3/8" 9/16" 3/4" 7/8"

1+ $5.80 5+ $4.60 10+ $4.20 25+ $3.60
SECOND HANDS 1+ .30 50+ .25

PRECISION MOVEMENTS
2024 Chestnut St., P.O. Box 689
Dept. G, Emmaus, PA 18049
(215) 967-3156

WOOD TOY

- ★ Patterns
- ★ Parts
- ★ Wheels
- ★ Many New Patterns to Choose from.
- ★ Free Shipping in U.S.A.

SEND $1.00 FOR NEW CATALOG AND RECEIVE COUPON FOR **FREE** WHEELS & AXLE PEGS.

toys and joys
Box 628W Lynden, Wash. 98264

BUILD THIS BLANKET CHEST

(17"Dx18"H x 36"W)

Order plans for this charming reproduction

This beauty will be admired by family and friends alike—especially when they see the great storage space that you've gained for your prized quilts and blankets.

The chest lid is hinged; and a pair of shallow drawers below add an authentic touch.

For complete building plans, including the know-how for duplicating the beautiful antiqued, painted finish, send $12. ppd. (Canadian residents please remit postal money order in US funds) to:

HAMMERMARK ASSOCIATES, Box 201-W7, Floral Park, NY 11002.

Product Sheet available for $1.00 (refundable). It's free with all Blanket Chest plans orders.

INCA

A Better Bandsaw
INCA Model 330 10" Bandsaw

Resaw a 6" thick hardwood slab into 1/2" boards for your next cabinet. Cut the graceful curves of a Queen Anne leg. Build toys for the kids. Cut the tenons for a trestle table.

Part of the complete INCA line, featuring **Cast Construction** and our **Five Year Limited Warranty.**

See your **Local INCA Dealer.**

For the name of your INCA Dealer, and a **FREE Brochure** write to: Injecta Machinery Corp., Dept. 512, 10 Van Dam Street, NY NY 10013

INCA **51 Years of Quality Woodworking Machinery**

THE HEAVYWEIGHT

BUILT FOR THE PROFESSIONAL / PRICED FROM $239

The Heavyweight is entirely American-made with top-quality materials and construction. It's priced for the hobbyist, but tough enough for the professional wood worker.

A 1/2HP motor with four-step pulley provides power to spare for turning, sanding, grinding, buffing and drilling. Accessories include a complete tool turning set and a face plate and sanding disk for outboard turning.

12" Wood Lathe
Ground steel ways.
100% American-made.
Cast iron head & tail stocks.
52" long; 38" between centers.
Sealed ball bearing head stock.

Free brochure on request.

WILLIAMS & HUSSEY MACHINE CO.
Dept. 24, Milford, NH 03055
Toll-free: 1-800-258-1380 In NH: 1-673-3446

Factory Lumber Outlet

"Woods of the World"

200 SHREWSBURY STREET
BOYLSTON, MASSACHUSETTS 01505

We stock over 100 species of domestic & exotic woods including:

- All Domestic Woods
- Apple
- Balsa
- Benge
- Brazilian Rosewood
- Bubinga
- Ceylon and African Ebony
- Ceylon Satinwood
- Cocobolo
- Curly and Birds Eye Maple
- East Indian Rosewood
- English Brown Oak
- European Pearwood
- Goncalo Alves
- Holly
- Honduras Mahogany
- Honduras Rosewood
- Iroko
- Jelutong
- Macassar Ebony
- Mahogany
- Mexican Rosewood (Bocote)
- Padouk
- Philippine Mahogany
- Purple Heart
- Shedua
- Teak

During more than a half century as millwrights and cabinetmakers, we have become experts in acquiring and working with the finest hardwoods and softwoods. Our knowledge of the best domestic and worldwide sources of rare woods is without peer. The large volumes in which we buy fine woods affords us the best possible prices which, in turn, we pass along to you. Iaccarino and Son is also your source for the finest lines of high quality woodworking hand tools.

Call For Free Catalog

(617) 869-2791

TOLL FREE:

In Mass. 1-800-521-0039
New England 1-800-222-1420

Information

WORTH WRITING FOR

Better Homes and Gardens®
WOOD,July/August, 1985
P.O. BOX 2051
CLINTON, IA 52732

TO ENSURE PROMPT HANDLING OF YOUR ORDER FOLLOW THESE INSTRUCTIONS:

- **Circle your choice**
- **Enclose cash, check, money order for cost of booklets plus $2.00 service charge (no stamps/foreign)**
- **Send coupon and remittance to address above**
- **ALLOW 4-6 WEEKS FOR DELIVERY**
- **Coupon expires August 18, 1986**

FREE LITERATURE

Circle numbers below corresponding to items in this issue.
Please include $2.00 for handling charge

20. 40. 78. 273.	278. 402. 550. 551.	552. 781. 1130. 1210.	1219. 1250. 1320. 1555.	1560. 1735. 2025. 2040.	2055. 2070. 2080. 2081.	2082. 2083. 2127.

PRICED LITERATURE

Numbers below refer to items on which there is a charge.
Please include proper remittance.

1.....$1.00 2.....$1.00 15.....$2.00 30.....$1.00 45.....$1.00 50.....$2.00 65.....$1.00 66.....50¢ 77.....$1.00 100.....$1.00 130.....$2.00 140.....$1.00 145.....$1.00 147.....$1.00	230.....$1.00 245.....$1.00 250.....$1.00 260.....$1.00 265.....$1.00 266.....$1.00 270.....$1.00 274.....$2.00 275.....$1.00 295.....$3.75 303.....$1.00 304.....$3.00 307.....$1.00 310.....$1.00	340....$7.95 400....$5.00 420....$2.00 450.....50¢ 495....$1.00 555....$1.00 560....$5.00 585....$2.00 600....$3.00 630.....25¢ 631..$12.00 710....$1.00 750....$2.00 760....$1.00	770....$1.00 771....$1.00 780....$1.00 800....$1.50 1025.....50¢ 1026....$2.50 1070....$1.50 1216....$1.00 1217....$2.00 1220....$1.00 1225....$1.00 1255....$1.00 1257....$1.00 1300....$1.00	1310....$4.00 1360....$2.00 1380.....50¢ 1440....$1.00 1535..$11.95 1710....$3.00 1720....$1.00 1740....$1.00 1745....$2.00 1750....$7.95 1751....$7.95 1752....$7.95 1753....$9.95 1754....$8.95	1800.....50¢ 1820....$1.00 1840....$1.00 1845....$4.95 1860....$1.50 1865....$1.00 1870....$2.00 1885....$1.00 1886....$1.00 2020.....60¢ 2030....$1.99 2031....$1.99 2032....$1.99 2050....$1.00	2075....$1.50 2077.....25¢ 2125....$2.00 2130....$1.00 2140....$2.50 2160....$1.00 2170....$2.50 2195....$1.50 2200.....60¢

Name (please print) _____

Address _____

City _____

State _____ Zip Code _____

I AM ENCLOSING:

$_____ for priced items

$ 2.00 for handling

$_____ total remittance

OUR EDITORS INVITE YOU TO HELP THEM BY ANSWERING THESE QUESTIONS:

1. Have you attended a woodworking show or exhibition in the past year?
   A. ☐ Yes
   B. ☐ No

2. Are any other members of your family involved in woodworking?
   1. ☐ Yes
   2. ☐ No

3. How many hours per week do you spend at woodworking?
   C. ☐ None
   D. ☐ 1 to 5
   E. ☐ 6 to 10
   F. ☐ 11 to 15
   G. ☐ 16 to 20
   H. ☐ More than 20

4. What's your level of woodworking ability?
   3. ☐ Beginner
   4. ☐ Intermediate
   5. ☐ Advanced
   6. ☐ Professional
   7. ☐ Teacher

5. How many woodworking projects have you completed in the past year?
   I. ☐ 12 or more
   J. ☐ 9 to 11
   K. ☐ 5 to 8
   L. ☐ 3 to 4
   M. ☐ 1 to 2
   N. ☐ None

6. Which of the following woodworking projects have you completed in the past year?
   8. ☐ Cabinetry
   9. ☐ Shelving
   0. ☐ Toys
   1. ☐ Fence
   2. ☐ Outdoor furniture
   3. ☐ Table(s)
   4. ☐ Chair(s)

7. Which one of the following tools would you most like to add to your home workshop?
   O. ☐ Planer/Joiner
   P. ☐ Radial Arm Saw
   Q. ☐ Lathe
   R. ☐ Router
   S. ☐ Scroll Saw
   T. ☐ Spindle Shaper
   U. ☐ Dust Extraction System
   V. ☐ Belt Sander/Disc Sander
   W. ☐ Band Saw
   X. ☐ Drill Press
   Y. ☐ Power Paint Sprayer
   Z. ☐ Table Saw

8. Which one, if any, of the following have you done as a result of reading any advertisement in this issue?
   5. ☐ Written or phoned to request more information about a product or service
   6. ☐ Cut out an advertisement for future reference
   7. ☐ Sent away for a catalog or mail-order product
   8. ☐ Recommended the purchase of a particular product or service
   9. ☐ Purchased a particular product or service
   0. ☐ Showed the advertisement to other people
   1. ☐ Other
   2. ☐ None of the above

9. What do you usually do with your issue of *Wood* after you have finished reading it?
   A. ☐ Save the issue
   B. ☐ Loan it to friends or relatives
   C. ☐ Give it to friends or relatives
   D. ☐ Discard it
   E. ☐ Other

10. What is your age?
    3. ☐ Under 18
    4. ☐ 18-24
    5. ☐ 25-34
    6. ☐ 35-44
    7. ☐ 45-54
    8. ☐ 55-64
    9. ☐ 65 or over

11. Do others use your copies of *Wood* for project ideas?
    F. ☐ Yes, relatives
    G. ☐ Yes, friends
    H. ☐ Yes, students
    I. ☐ Yes, business associates
    J. ☐ No

12. In which of the following categories is your annual household income before taxes?
    0. ☐ Under $15,000
    1. ☐ $15,000 to $19,999
    2. ☐ $20,000 to $24,999
    3. ☐ $25,000 to $34,999
    4. ☐ $35,000 to $49,999
    5. ☐ $50,000 to $74,999
    6. ☐ $75,000 or more

REPAIR GUIDE HELPS SOLVE PROBLEMS

Most people have a squeaky hinge, a leaky faucet or a crack in the ceiling in their homes that needs to be repaired. With today's labor costs, hiring a handyman could be extremely expensive. So accountants, artists and barbers have become weekend handymen. To help them, Better Homes and Gardens introduces the COMPLETE GUIDE TO HOME REPAIR, MAINTENANCE AND IMPROVEMENT.

- **515 how-to techniques**
- **2,734 illustrations**
- **75 comparison charts**
- **552 pages**
- **Hardcover**

Better Homes and Gardens® Books

This book is a comprehensive guide to a home's components. It tells how each part operates, how to maintain and repair it and how to make it look or function better. Four main sections — Inside Your Home, Outside Your Home, Your Home's Systems and Basics You Should Know — make it easy to locate information in this book. Page-by-page listings of subject matter start off each section. The sections break down into chapters which discuss each major topic. The book is cross referenced so readers won't miss important advice on any aspect of a particular job.

To help do-it-yourselfers understand each job, there are anatomy drawings to show just what's under a floor, behind a wall or inside a furnace. These drawings let do-it-yourselfers learn what they're getting into and why a repair needs to be made.

One of the first steps in tackling a home repair or improvement is to study the step-by-step drawings which illustrate exactly how to make repairs. Color-coded finder headings in the outer margins help readers find these sections.

Easy-to-understand charts enable readers to compare materials, choose the ones that best fit their needs and discuss the advantages and disadvantages of a variety of materials.

Beginners can build their knowledge and confidence by reading the Basics You Should Know chapter. A person can learn how to build a tool collection, which tools to use for each job and how to maintain them, which materials to use and how to work with them.

THE LEADING EDGE.

Black & Decker®

3/8" DRILL

Introducing a revolution in power tool technology, the M47 Series™ Drill. From Black & Decker.

It's a drill that has been redesigned from top to bottom. The sides are straight, parallel with the drill bit and square to the work surface, for easier, more accurate drilling. The back of the drill is flat, so hand pressure can be applied directly in line with the bit. It's got a center pistol grip for better balance. And an optional rotating side handle for better control,

with a compartment for storing bits.* And it comes with a Full 2-Year Home Use Warranty.

This superior shaped tool has been made possible through a remarkable innovation in small motor technology. A high efficiency, high density, copper wound motor, with more power and more torque than our comparable traditional motors, yet is 25% smaller and uses less electricity.

The M47 Series Drill. One of the revolutionary, new M47 Series power tools. From Black & Decker.

Truly the leading edge in power tool technology and design.

**Side handle will be included FREE with purchase of the M47 Series 3/8" Variable Speed Reversing Drill (model #7144) thru 6/30/85.*

M47 Series™